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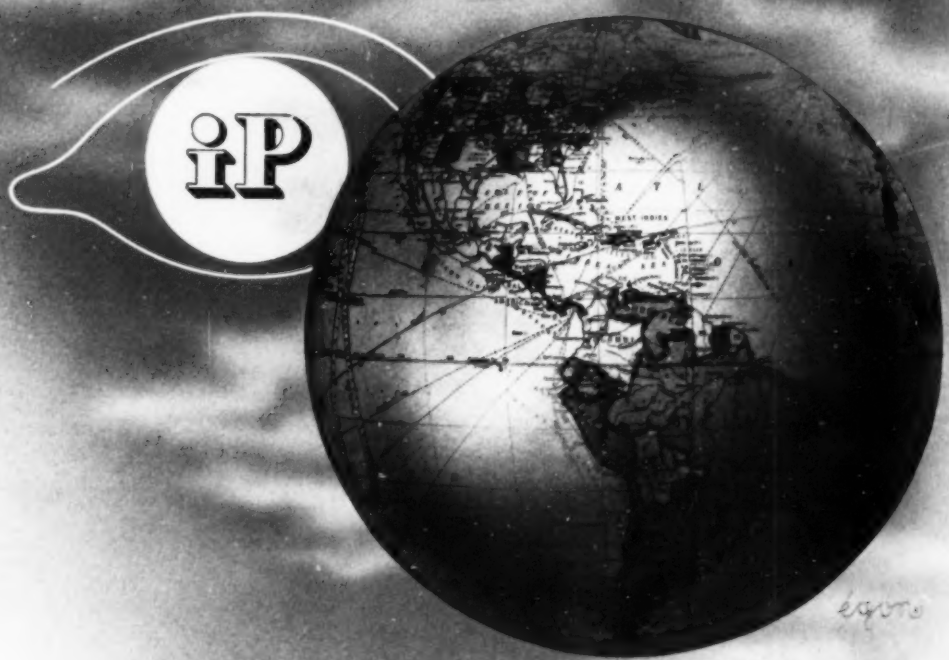

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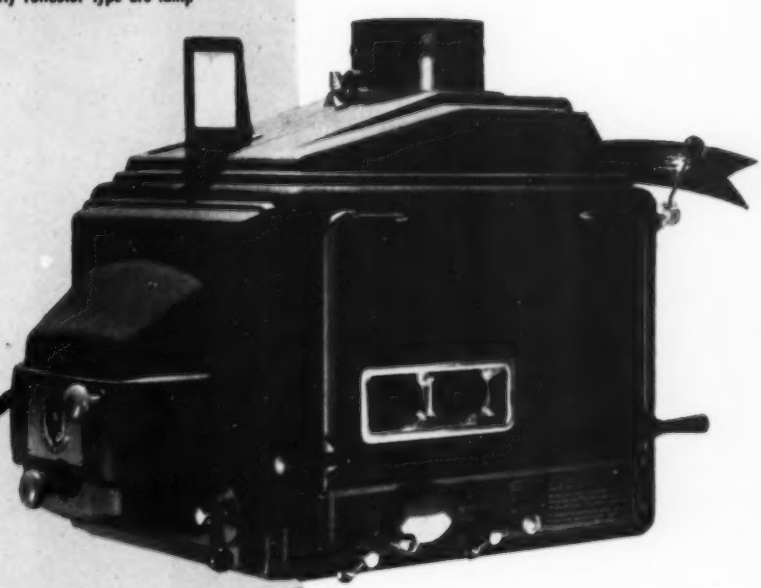

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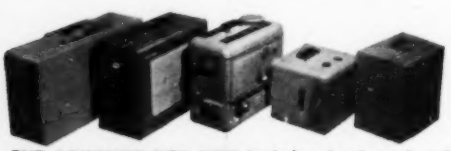

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JAMES J. FINN, *Editor*

Volume 28 MAY, 1953 *Number 5*

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MONTHLY CHAT

THE time has passed when any useful purpose can be served by flailing about and castigating the "leaders" of the motion picture business for their disgraceful inactivity in getting together and agreeing upon at least minimum technical standards anent the various new processes now being thrust upon the bewildered exhibitor. Not that IP goes along with the "wait-and-see" attitude so blandly displayed by the bosses in production and exhibition; far from it. But it's crystal clear that no amount of prodding will bestir these fellows—they're on their own and everybody else be damned.

IP feels that the best service it can render its readers during this transitory period is to chronicle as accurately as possible developments in the various 3-D, wide-screen, and the stereo sound processes.

20th Century-Fox finally took the wraps off its CinemaScope process for a large segment of the exhibition field, and the general public, via a series of showings at the Roxy Theatre in N. Y. City. The setup included the following: the now familiar Chretien anamorphoscope, a lens which compresses the image in production onto a 35-mm film and, subsequently, in projection, expands it to wide-screen proportions; a projection screen which in the Roxy was 65 feet wide by 25 feet high, and a special sound reproducing system which utilized three tracks on magnetic tape, with its special reproducer system, plus the conventional single track on the film itself.

It will be noted that this CinemaScope aspect ratio approximates 2.66 to 1, and 20th has announced that it will shoot its entire feature output with this ratio. Well, IP still doesn't like the image of a 14-foot long dame lounging on a penthouse terrace; and while it has previously expressed a preference for an aspect ratio of 2 to 1, it now frankly admits that the range between 1.66 and 1.85 to 1, the latter combo the top figure it would endorse, is probably the right size.

Picturewise, IP just can't buy the "ribbon effect" of the CinemaScope proportions, and it is significant that there are already hints from 20th Fox quarters that the ratio will be shaved to at least 2 to 1. IP will bet that it will finally wind up around the 1.85 to 1 level.

As to width, IP thinks that a 65-foot screen is the veriest nonsense, and this view stems from the ill effects experienced after the showing as a result of the intense neck-swiveling required to take in

(Continued on page 22)

Total destruction . . . to order

Much as the director might like to, he cannot destroy a city for the sake of his motion picture. Nor can he sit and wait for a holocaust.

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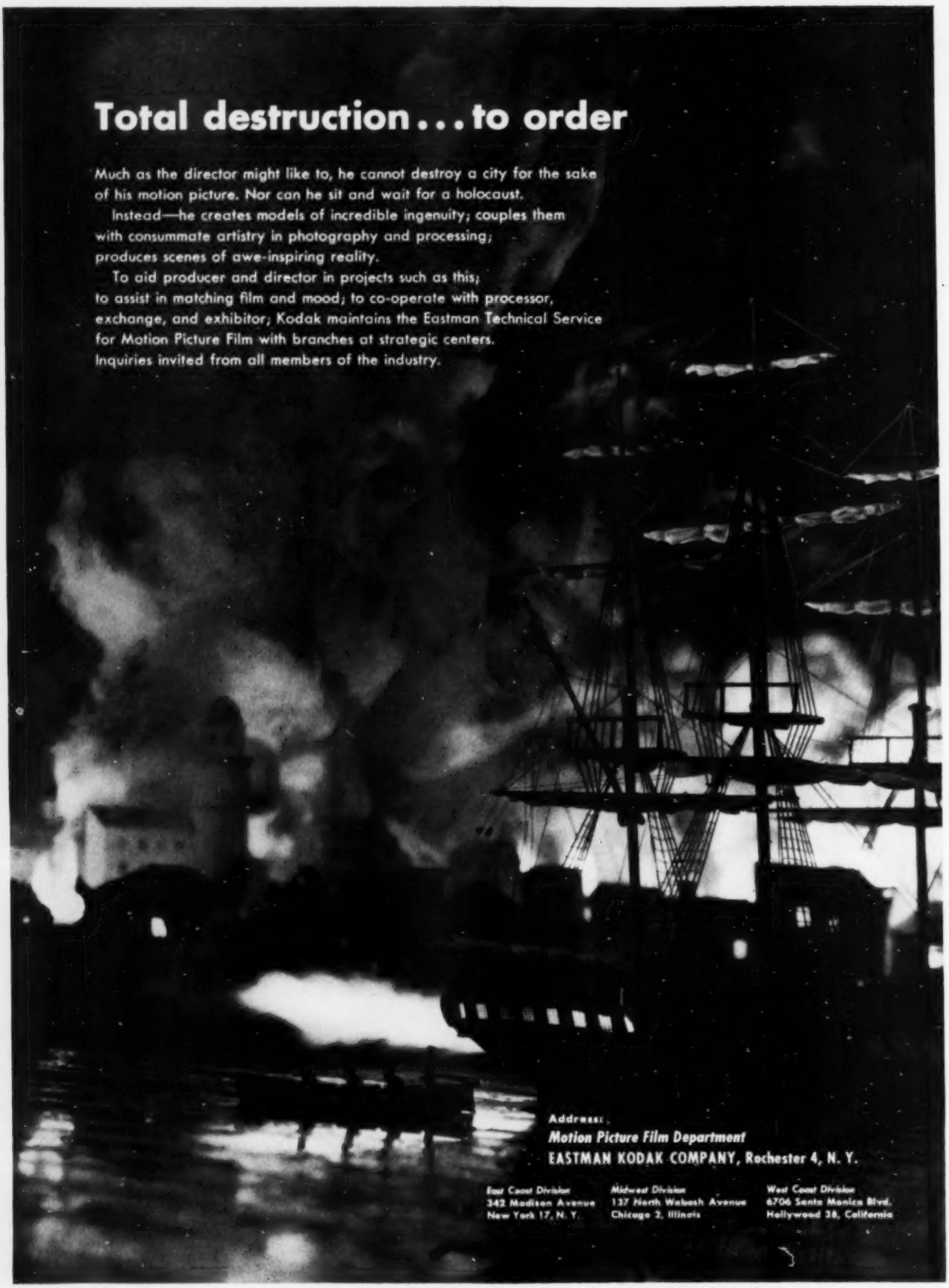

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VOLUME XXVIII MAY, 1953 NUMBER 5

Visibility Factors in Projection

I. Panorama Vs. Stereoscopy

By ROBERT A. MITCHELL

MOST projectionists have yet to encounter the newer systems of visual projection. And because there are several panoramic (wide-screen) and stereoscopic (3-D) processes under extensive development, the future of theatre movies is regarded with a certain amount of bewilderment.

In the panoramic camp we have Cinerama and CinemaScope. The stereoscopic contenders include Natural Vision and Paravision, among others. Thanks to the competition provided by home Tv, the issue has become a life-or-death struggle. And the customer-pulling novelty value of all these processes has increased the fury of the fray.

Regardless of the technological warfare, the fact that the theatrical motion picture is primarily a *dramatic* medium should not be overlooked. When, about 40 years ago, people tired of watching trains speeding at them head-on from the screen, of the visual thrills of roller-coaster rides, of seeing unconnected scenes of the travelogue variety, the movies survived the palling of their novelty by drawing upon their then untapped resources as a dramatic medium. If motion pictures were not also *emotion* pictures, they could not survive.

Wide Screen Merely a Novelty?

The wide screen, represented by Cinerama, has enjoyed considerable success as a *visual* novelty, *all spectacle* and no *drama*. Is the wide screen capable of telling a story, of arousing the deeper emotions, of creating mood and "atmosphere"? We have our doubts, but we shall soon find out. CinemaScope, 20th-Fox's single-projector carbon copy of Cinerama's triple-projector system, will make its debut garbed sanctimoniously in "The Robe," a pseudo-religious narrative. Time will tell how effectively the wide, dimly-lighted CinemaScope screen translates this pious tale.

Advantages of Stereoscopy

Stereoscopy possesses obvious advantages as a medium of dramatic expression, however. Natural Vision 3-D is startling, despite its present mechanical limitations. Objects in a true 3-D picture can move about to and from the observer as well as from side to side and up and down. The distant hills in 3-D really look distant—miles behind the screen. Nearer objects actually look closer; and actors may come within arm's reach. Moreover, the director of a 3-D film can optically adjust distances to produce whatever effects he desires—within the limitations of a given lens setup.

Both Cinerama and CinemaScope, on the other hand, are as flat as a curved pancake. These processes are not stereoscopic in any sense of the term. The curved screens which they utilize are an attempt to "surround" the audience with the projected scenery.

Unfortunately, however, viewing perspective and screen curvature do horrible things to the configuration and shape of objects in the picture. Straight lines appear bent, or bowed. Even the horizon-line in landscape shots either humps up to form a non-existent hill or else hollows in to form a vale into which one half expects precariously balanced rocks and trees to tumble. There is no getting away from these funny effects because certain optical requirements for good projection are violated by the curvature of the screen.

We expect that "The Robe" will suffer as an inevitable consequence thereof.

CinemaScope, nurtured at the breast of 3-D-hating Darryl Zanuck, utilizes standard 35-mm film and standard frames. The trick is turned by optical wizardry. Over the camera lens is placed a cylindrical lens that "compresses" a wide field into the regular aperture. The prints are made in the ordinary way; but when they are shown, an achromatic cylindrical lens is placed over the projector lens. Being turned to an angle of 90 degrees to the position of the camera cylindrical lens, this lens performs an *opposite*

function—it *expands* the *squeezed* film-photograph to wide-screen proportions.

Reflected Light Level

A difficulty arises. The CinemaScope screen has approximately three times the area of the regular screen. Screen illumination accordingly falls to 33⅓% of normal. (Actually, it is less than this because the cylindrical lens wastes about 10 or 15% of the light.) New and more powerful lamps are required for CinemaScope showings; and lamps sufficiently powerful for good CinemaScopy showings in medium-sized and large theatres do not exist; nor could the 35-mm film image accept so much light without damage. This light problem does not exist in Cinerama, which uses *three* projectors, each covering *one third* of the wide screen. But Cinerama is plagued by difficulties of a different nature.

What about the polarized-light 3-D process, such as Natural Vision? In its present stage of development, 3-D is a 2-film process requiring two projectors to run simultaneously and in synchronism. This is admittedly a makeshift which inevitably makes perfect superposition of the stereo pairs impossible because of minor film-weave and jump, slight differences in the focal lengths of the two projector lenses, and a condition of parallax created by the distance separating the two projectors.

Then too, Natural Vision takes us back to the day of between-reel intermissions. Will theatre patrons who wisely abstain from concession-counter abominations be willing to sit before a "dead" screen listening to worn-out juke-box records for a quarter of an hour once or twice during a show without longing to be home watching Tv?

Present Advantage—Future Grief?

We also wonder if moviegoers will consent to wearing the slightly dim and foggy Polaroid spectacles after the novelty of 3-D has worn off. And will the owners of wide theatres be willing to sacrifice side seats because aluminum screens, necessary to maintain the polarization of light, throw light forward, mirror-fashion, in a narrow angle?

These considerations have not yet been accorded exhaustive discussion by those most interested in polarized-light 3-D movies. Engineers are well aware of all these thorny problems, but promoters feel that these drawbacks may be ignored for the present. They know that the patronage-attracting value of a spectacular novelty covers a multitude of technological sins—*for a while.* This attitude is a necessary one to adopt because it permits 3-D to be presented *now.*

Sound systems were far from perfect when first introduced; but when installed in theatres, bad as it was, and improved from time to time until it attained its present state of perfection. There are good reasons for thinking that 3-D will parallel the history of sound in its development, and that, eventually, the public will assent to the wearing of Polaroid glasses, a small price to pay for the added realism and vastly enlarged visual and dramatic scope of movie entertainment.

It is a pity that successive-field stereo films are not feasible—one frame for the right eye, the next for the left eye, the third for the right eye, *etc.* Single-film 3-D would eliminate a great many problems and cut equipment costs for the exhibitor; but extensive tests have amply demonstrated that successive-field 3-D is productive of eyestrain and such attendant ills as a sick-at-the-stomach feeling. Why, nobody knows; but it's a fact.

Panorama has made good use of stereosound. In fact, it may be said that stereosound is a necessity for all *wide-screen* projection, flat or curved. Illusion would be spoiled if all the sound emanated from the middle of the screen. Cinerama's stereophonic sound, reproduced from multiple magnetic tracks, is O. K.

3-D and Wide-Screen Combined

Universal has gone whole hog into the matter of utilizing the new techniques and is releasing a picture that combines Palaroid 3-D, panoramic wide-screen and stereophonic sound. A science-fiction thriller titled "It Came From Outer Space," the picture is having a dual premiere in the Los Angeles area May 27th.

Exact size of the screen has not been reported, but the aspect ratio is 1.85 to 1. A similar screen being installed at the Loew's State Theatre in New York City for another Universal production, "Thunder Bay," measures 46 by 24 feet and has a concave curvature of about 3 feet in depth. However, this picture will be shown wide-screen but without Polaroid 3-D.

Universal asserted that it has striven to design a more directional screen to assure the maximum of illumination for combining wide-screen and Polaroid 3-D in "It Came From Outer Space." It is constructed of textile sprayed with an aluminum solution. A light surround rather than masking of the screen is recommended for improved viewing.

Old Tricks Revived

Stereoscopy, likewise, will be severely handicapped by the old-fashioned, horn-behind-the-middle-of-the-screen system. Projectionists need only bestir their memories to appreciate the fact that recent panoramic and stereoscopic stirrings in the cinematic cauldron are only modern versions of old tricks. Theatre Tv, now of uncertain future, is indeed something radically different; but in panorama and stereoscopy he will meet old friends in new guise.

As Cinerama has proved, the wide screen depends upon stereophonic, multi-directional sound for much of its spectacular effectiveness. Memory must needs turn back about 15 years to pinpoint the inception of stereosound.

Walt Disney's "Fantasia," with sound reproduced from multiple photographic soundtracks, amply demonstrated the superiority of stereosound even for the conventional screen. In fact, manufacturers were prepared to produce stereosound theatre equipment on a commercial basis by the time World War II broke out. Hollywood, however, procrastinated on the matter of standardization, adopting its usual "wait and see" attitude. Came America's participation in the war, the box-office boomed. That was that.

But now Tv is pre-eminent as a mass-entertainment medium, and motion-picture people, acutely feeling the pinch, are grasping at any straws which promise to keep their heads above water. Stereophonic sound now has better than an even chance of finding a home in the neighborhood theatre.

Panoramic Projection Old-Hat

Panoramic projection had grown a knee-length beard even before Grandeur's "Happy Days." Cinerama's new baby is really the same old boy, shaved and swaddled in curved-screen diapers. The memory of most of us may not go back to the Corbett-Fitzsimmons fight held in Carson City, Nevada, 1897, but it's a fact that this tussle was filmed and projected *via* special wide film having frames proportioned in the 1:2 ratio. And it "awed" the customers with its wide-angled realism!

The Rubin Magnascope (Harry Rubin, of Paramount) an auxiliary

(*Continued on page* 30)

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The Drive-In Theatre Dissected

By WILBUR FLAHERTY

Secretary, IA Local 389, Fort Dodge, Iowa

THE AUTHOR: WILBUR FLAHERTY who joined the IA in 1928 at the age of 18. He served with the U. S. Signal Corps during World War II, holds a first-class commercial radiotelephone license, has worked at AM and FM radio broadcasting and at maintaining mobile two-way radio systems for taxi companies—this, in addition to his Union duties and his job as a projectionist. "Outside of the aforementioned," says Flaherty, "my time is my own."

HOW IT HAPPENED: Several contributions to IP by A. Buckley, of Yorkshire, England, sparked a regular correspondence between him and Wilbur Flaherty, whose folks hailed from Yorkshire. Recently, Mr. Buckley sought and obtained from Mr. Flaherty the accompanying paper on drive-in theatres, which was read before the Leeds Branch of the British Kinamatograph Society. The British fellows loved it, we hear; and so did we.—ED.

LIKE most commercial ventures, the drive-in theatre came into being to make money for its sponsors. It appears to be a profitable melding of the great American urge to go somewhere while sitting down and also the urge to be entertained with the least possible effort.

To attain this state of happiness one must get in a car and drive out to the drive-in where the patrons witness the picture to the accompaniment of the crunching of popcorn, the gurgling of ginger beer, and the sound effects born of the desecration of hot dogs and mustard. In short, it is the projection of sound pictures under the stars. Americans cannot do the simplest things unless food is consumed simultaneously. But, it does make the dollars roll into the cash register.

Location of Vital Import

With this as a premise, we must give first consideration to the location of the drive-in theatre. Most favored spots are those near the edge of the city. Accessibility to the city patronage and the rural are equally important. The location should be *near* but *not on* a main highway. This insures a minimum of traffic congestion while filling and emptying the theatre. Location is extremely important.

Of equal importance is the matter of grading the grounds, drainage, cost of land, *etc.* The cost of grading, preparing the ramps, and provision for drainage of run-off water are serious items to the prospective builder. The ramp is that specially shaped and prepared area wherein the auto is parked while its occupants watch the show. The ramps are arcs of concentric circles whose center is the screen or screen tower. The service loop allows space for cars to accumulate while waiting for vacant ramp space, similar to standing room in conventional theatre.

Since considerable grading is necessary and the cost of earth-moving is about 30¢ a cubic yard, it is apparent why the prospective builder searches for a site which will require the least expenditure and still be in an area which will draw the cash customers.

Factors Affecting Type

The size, or car-holding capacity, of a drive-in, depends on the estimated revenue. Under this heading can be lumped the population of the adjacent city, the expected rural patronage, location, the strata of society one expects as patrons, and competition from other drive-ins either actual or worried about.

A homemade drive-in wherein the owner does much of the construction work may be built for around $20,000. This is the bare bones with little in the way of big time accoutrements. One might say it consists of a cash register, a screen and projector, lots of gently rolling hillside plus a great hope in the future. Strangely enough, many of these low-cost theatres have proved very profitable.

On the other hand, there are the super-de luxe jobs with baby sitters and children's playgrounds in the greensward just before the screen. One theatre in Florida is reputed to have a choice of either warm or refrigerated air available to be blown into each car along with the sound. Of course, the admission prices will advance according to the luxury of the layout and the class of customers.

Size, Clientele, Prices

A typical small drive-in of 300- to 400-car capacity will charge about 50¢ for each adult in the car, and children free, or will make a flat rate for each car regardless of occupants. A good share of income is derived from the sale of food, drink, *etc.*

The class of expected customers has somewhat to do with the money expended and the admission charged. If location is near a district of predominately lower income groups, the refinements in the theatre are little and the admission low. If located in the summer resort area where the customers are vacationists with an urge for one last fling before extinction, the trappings are more gaudy and the prices higher.

In the southern part of the U. S. A. the operating season may be as long as nine or ten months of the year. In the northern part the season extends from

Geneva Drive-In Theatre, San Francisco. Data: projector arc pulls 100 amps and produces a 61-foot picture at a distance of 512 feet. Projection room is in grandstand (not shown) at foot of illustration.

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★Projects the tremendously increased volume of light required because of the increased screen size, the 50% light loss at the screen resulting from the use of polaroid filters, and the further loss to the viewer occasioned by the use of polaroid spectacles.

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The position of the positive arc crater is automatically maintained at the exact focal point of the reflector by means of the exclusive Lightronic crater-positioning system. The positive and negative carbons are advanced by separate motors, the speeds of which are governed by the Bi-metal Lightronic Tube. Once the arc has been struck, the crater positioning and the gap length are automatically maintained without manual adjustment of the controls. A stream of air directed just above the arc stabilizes its burning.

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★ Permits long periods of continuous operation, impossible with rectifiers designed to operate lamps on 20-minute cycles.

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The complete electrical and mechanical assembly consists of three transformers, six tube sockets, and manually-operated output-control handle which actuates the 8-point rotary switches that are employed to increase or decrease the output power even when the arc is burning.

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May to November with snowfall as the final deterrent. When the snow blocks up the lenses its time to wrap up and hibernate till Spring.

Free, Easy Atmosphere

To recap, we might say that the primary attraction of the drive-in is its free and easy atmosphere. Certainly the customers do not come just to see second-and third-run pictures. Mainly it is the desire to keep Mother and the children occupied for one more evening.

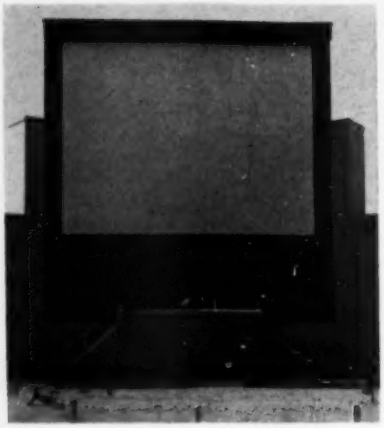
Father comes home from work or in from the fields and after supper loads the family into the car and heads for the drive-in. Father still wears his work clothes. Mother is still nursing the baby, and the other children are merely normal kids seeing a movie under a different guise. In America every man's home is his castle and every man's car is an extension of that precept. Television is rapidly changing that somewhat.

Earlier we mentioned the refreshment situation. Usually the building which houses the projection facilities also contains the concessions, which is Americanese for "eating something" while having a good time. With taxes, ever-increasing overhead and all, it seems that the American exhibitor must have a supplementary source of income, and with this arose the conception that people come to the movies *not* to see the movies but to eat. So, prominent in the design of drive-ins is the concession stand. When one considers that about 30 to 50% of the income of a drive-in comes from the concession stand it is easy to see why the concession building is important.

The concession dispenses candy, pop (ginger beer), popcorn, hot dogs, ice cream, *etc.* This translated into reality means a small projection room and a large concession stand. One of the end results is that the projection room operates at an ambient temperature that is not mentioned in polite society, plus a multitude of insects attracted by the bright lights. We have all heard of the moth singed by the flame, and that applies to the projectionists in a drive-in.

Individual Car Speakers

The drive-in is fundamentally a motion picture theatre moved outdoors and wherein the sound is piped to each auto with a volume control on each car speaker so that the listener-viewer can regulate conditions to suit himself. It



Typical drive-in screen mounting.

sounds simple, but with screens 40 feet wide and 150 feet away, with 100 to 500 watts audio power spread among 300 to 900 speakers, and various other ailments, the lot of the projectionist is not always too easy. But projectionists are a hardy lot in any land.

After a particular piece of land has been approved for construction, the next question, depending on the slope or on the "levelness" of the land, is the type of ramp to be used. Several types have been used. One of these has either the front or hind wheels of the car setting in a shallow ditch to give the desired slant toward the screen. This method has the advantage of lower first cost but its application is limited and has the added disadvantage of difficulty in entering and leaving the ramp. The other and most used type of ramp can be compared to a series of concentric waves in the ground radiating out from the screen.

Alignment of Ramps

The purpose of the ramp is to tilt the auto so that the screen can be viewed by the occupants while sitting in the same position as when normally driving along a road. Since the center line of the screen is 35 to 65 feet above ground level, it is necessary to slant the entire auto toward the screen center.

Since each arc of ramps is progressively farther from the screen, the angle of tilt on each ramp will become progressively less as the distance from the screen increases. With this comes the necessity of providing an unrestric-

(*Continued on page* 25)

Projected Light & the Curved Screen

A GOOD projection lens is designed to form an image on a plane surface. The light rays contributing to the formation of *each point* on such image (italics ours—Ed.) emerge from the aperture of the projection lens, 2 inches or so in diameter, and 100 feet or more away. The cone of light thus formed has a very small included angle and, in consequence, a displacement of the screen a few inches from its theoretical plane surface would have little or no visible effect upon the image quality.

A sufficiently concave screen would have some effect upon the distortion of the screen image when viewed from a position to the extreme right or left of the theatre. Figures on the far side of the screen from the observer would appear somewhat less distorted, since the viewing angle would be less acute; those on the near side would appear *more distorted* (italics ours); and those in the center would remain unchanged. Whether these results would be of advantage to the audience we cannot say.

Very much open to question in our mind, however, is the statement that a screen composed of two layers would add anything to the illusion of depth in the projected image, or that this arrangement would polarize the image or eliminate glare; but we are willing to be shown.

This matter of curved surfaces would need, and seems worthy of, much more thorough investigation and some tangible information if one is to properly evaluate its worth or lack of it. Thus far the proponents of such screens have offered nothing that would provide the basis for such scientific appraisal.

It appears that the manufacturers of such screens consider each installation as an individual problem and that each screen must be specially designed on the basis of width of theatre, screen size and length of throw. An analysis of a typical situation of this sort and of the method whereby the curvature of the screen is computed would be of considerable interest and a most worthly contribution to the literature of the art.

The 'New' Cooling Systems

By CHARLES A. HAHN
J. E. McAuley Mfg. Co., Chicago, Illinois

VARIOUS articles appearing in the trade press concerning cooling methods for the projection apparatus, including all components, tend to mislead the non-technical personnel of the industry. These "new" systems are a source of wonderment to the writer.

First of all, let us analyze the various components and see just exactly what has been "invented." *Keep the following facts in mind*:

1. As is generally known to the trade, we in our Peerless Hy-Lumen Heat Glass Absorbing Filter have been using a blower and air blast for cooling the heat filter medium.

So, there is no invention or anything new involved in this respect.

2. Dichroic filters, otherwise referred to as heat-reflective coatings, have been known to the optical world for the past 8 or 10 years. I believe the Bausch & Lomb Optical Co., as well as Fisch-Schurman, have been selling such coated glass circles for the past 4 or 5 years.

So, there is likewise no invention here.

Angular Mounting

The only thing now left is the method of angular mounting of the glass with the dichroic coating in the optical axis of the projector. According to this, we "invent" an "angle." I think that all projectionists are aware that angles were invented long before anyone now here was alive.

My further comments are that the claimed percentages of visible light transmission of a dichroic-type filter is rather exaggerated at only a 5% to 6% loss. Generally, such transmission determinations are made by laboratories of dichroic filter manufacturers who employ infrared electric bulbs as the source. This, of course, is just the kind of illumination source that is *not* used when projecting motion pictures.

We believe that when making comparison of dichroic-type heat filters to heat-absorbing glass filters, the first step is to expose each that is to be tested for relative efficiency to 60 hours of actual usage *under projection room conditions.* This, we think, is an absolute *must* if we are not to kid ourselves when making a decision.

Absorption vs. Reflection

One manufacturer states: "However, none of these systems" (air-blast and heat-absorbing glass) "have been accepted as the ultimate answer to the heat problem." Also, "Heat-absorbing glass does not seem to be the answer by any means, as a light loss is almost equal to the heat loss."

Both of these statements are false, having no basis in fact. In our development work of over 12 years, we have at some time done exactly what is now heralded as "new."

We prefer the heat-absorbing glass to the heat-reflecting dichroic type for the very good reason that the dichroic coatings have a high degree of fragility and are extremely sensitive to overheating. When overheating has been experienced, their effectiveness is annihilated; after which it even follows that the burned coatings only allow 40% to 50% of the visible light to be transmitted.

Phosphate heat-absorbing glass has no such qualities, and, if kept clean, their light transmission is practically a constant factor.

Insulators Sometimes Conductors

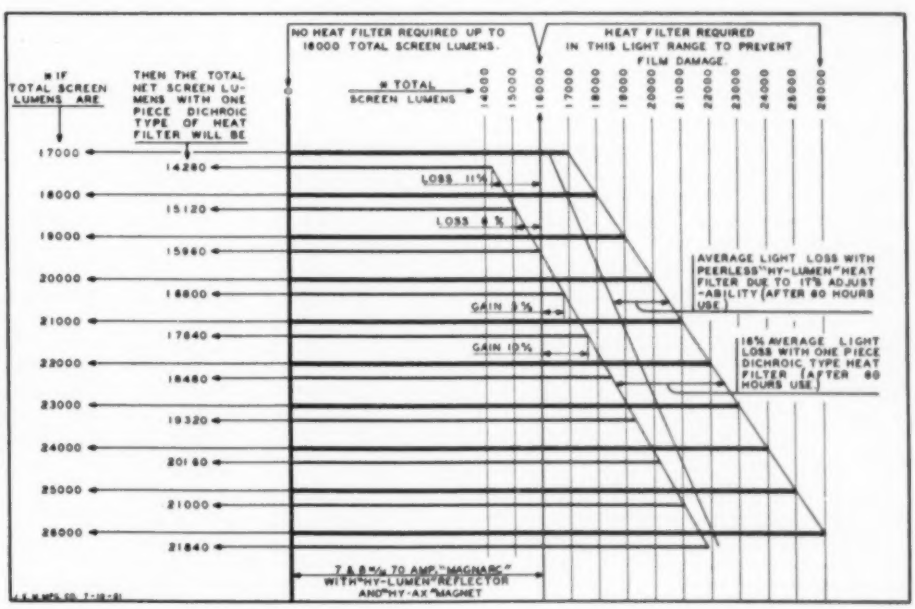
An interesting aspect of electrical insulators is the fact that under certain conditions they will conduct electricity even though they are by definition non-conductors.

Comparatively large currents can be produced in certain insulators by bombarding them with high-speed particles of atomic size. The particles liberate charge carriers within the insulator, and these may move if an electric field be applied.

The action of solid-state devices, such as varistors, or transistors, depends on electrical conduction through non-metallic solids. Conductivity induced by bombardment is one of the tools at the disposal of scientists for measuring the behavior and improving on such devices as the transistor.—BELL TELEPHONE LABS.

HEAT-FILTER LIGHT LOSSES

Obtained using an F:2.0 coated projection lens—without projector shutter, or porthole glass, or ± G-292-E Pyrex air deflector. No allowance has been made for metal reflector losses or for water-contact cooling devices when used with carbons not designed for such operation.



Addendum: 3-D Projection

By MOTION PICTURE RESEARCH COUNCIL

IN LINE with IP's policy of disseminating all shades of opinion anent the various "new" production and projection processes, we present herewith an addendum to the report by the Research Council which appeared in IP for March last (page 12). Properly, these data should refer to and be considered as a supplement to the aforementioned article.

Projector Filters

The purpose of the projection filters and audience viewing glasses is to permit the left picture to be seen only with the left eye and the right picture with the right eye. If the projector filters are not properly set over the port, some of the left picture will be seen by the right eye, or vice versa, and this causes a ghost, or double image, to be seen by the audience.

Where plastic filters are furnished, the manufacturer recommends cooling the filter. NEVER PROJECT WHITE LIGHT THROUGH THESE FILTERS—IT WILL RUIN THEM.

Another precaution—the filter should be perpendicular to the lens or the filter may affect focus. In other words, if you have a projection angle, the filter should not hang vertically, but the bottom of the filter should be slanted out from the booth wall to match the angle of the projector.

Screen Brightness

The normal "matte-surface" screen cannot be used with 3-D pictures because it depolarizes and "ghosts"—that is, both eyes would see both pictures. A metallized screen must be used. Aluminum is preferred because it reflects all colors equally so that the color balance of the print is not changed in projection.

The brightness of the 3-D picture, using two filtered projectors and a directional screen, is *less* than the brightness of a regular picture using one machine. Therefore, every means of getting the maximum amount of light from the equipment must be utilized.

The proper size carbons should be used at their rated voltage and current. The mirror or condenser in the lamp house should not be pitted or discolored. Projector lenses should be the fastest obtainable. Care should be taken to properly adjust the arc with respect to the optical system so that the light path is in perfect alignment.

Shutters should be properly adjusted for maximum opening without travel ghost. Port hole glass should be inspected to see that it is of good quality and without scratches or discoloration. The light output from the two projectors should be balanced.

Projection Procedure

The two projectors must be aligned so that their vertical and horizontal center lines are superimposed on the screen. The Motion Picture Research Council has prepared target test film for aligning projectors. This same target test film is used for aligning projectors for both 3-D pictures and regular pictures.

Because of differences in photographic techniques, either the left print or the right print, or both, may be projected emulsion-toward-the-light or emulsion toward-the-lens in 3-D films. The sound track will be on the proper edge of the film.

If the optical axis of either lens is not correctly centered, reversing the emulsion position and refocusing will cause a horizontal shift of the picture on the screen. Therefore, to be certain of proper alignment, the test loops should be threaded with the emulsion in the same position as it is on the prints to be projected.

When the alignment film loop is projected nonstandard (that is, emulsion-toward-the-lens), it must also be reversed—that is, run backward so that the sound track will be in the proper position. In this case the test target will be upside down, but this is satisfactory as the loops can be used either way.

Testing Alignment

The alignment of the projectors should be checked frequently as vibration may cause the projectors to get out of alignment. Always re-align for a 3-D feature which does not have the same emulsion positions as the previous picture.

When threading up, it is extremely important that both machines are threaded exactly in synchronization. Should either machine get even one frame ahead of or behind the other machine, the action on the screen will be blurred.

One of the prints will be marked to designate which of the two is to be used as the sound print. As explained above, some prints will be projected in the standard manner, some will not. Where the print is projected standard, the sound optical system will be in focus. Where the print is projected emulsion-toward-the-lens, or non-standard, normally the high frequency tones would be deficient. However, the studio sound department will equalize for this high frequency loss. *Do not re-adjust the optical system.*

Tests During Projection

As soon as the main title comes on, look at it *without the 3-D glasses* so you can see both pictures. Slowly frame the left machine so that the title words line up along the top edge of the letters. Only the left machine should be framed. The framing must be done with extreme care and *very slowly*.

If the main title seems to be out of horizontal alignment, *don't change it;* the whole 3-D effect depends upon parts of the picture being slightly separated on the screen.

During the main title the focus should be checked, because the picture print may be of a different thickness or projected nonstandard compared to the test film. The left eye will then see only the picture from the left machine and it can be focused.

When focusing the right machine, cover the left eye. Sharp focus is quite important because if one machine is a little out of focus it will make the audience feel like one side of their glasses has a smudge on it.

Special projectionists' glasses are now available as an aid in focusing. Two pairs are used in each booth. One pair has both right eye filters for focusing the right machine, the other has two left eye filters for focusing the left machine.

During projection it is possible for one projector or for one print to get a little out of alignment vertically. The picture

Motiograph's Stereo Sound

Motiograph, Inc., announced the early availability of two models of stereophonic sound systems, one for theatres of 1,600 seats or less, and another for larger theatres. The equipment contains a magnetic reproducer capable of reproducing the sound from films containing three magnetic sound tracks. When electrically interlocked with the existing theatre sound system, sound will be reproduced through three separate loud speaker systems, and a number of auditorium speakers.

Speaker equipment consists of three Altec Lansing loudspeaker systems and from 10 to 15 high-quality auditorium speakers. The two systems vary only in the amount of power output of the three power amplifiers and the size of the loudspeaker systems. First deliveries are to be made in late June. Orders may be placed now with Motiograph dealers.

should be viewed frequently without the 3-D glasses to check vertical alignment.

Out-of-Frame Conditions

For various reasons it is possible for either picture to get one or more frames out of sync with the other picture. When this happens, it shows up on the screen by affecting objects in motion. With 3-D glasses, watch the picture and look at anything moving, such as a person's lips as they talk, or one's arm as they walk. If the two pictures are out of sync, the objects in motion have an odd effect as if they were drifting apart.

To check synchronization of the prints, footage numbers on each side of each splice in both prints should be checked to determine if both prints contain an exactly equal number of frames.

In case of a film break, pick out two identical footage numbers (both prints will be identically numbered every foot along the edge of the entire print) and mark this position on each print with a marking pencil or small piece of white tape. Use these marks as start marks and rethread.

After projection, the broken print should be repaired by adding black frame line leader to replace the missing frames. For example, if four frames are destroyed, insert six frames of black frame line leader. Six frames are needed because two more frames are destroyed in making the splice.

To Trim or Not To Trim

In the last issue of IP (April, p. 14) in LETTERS TO THE EDITOR, there appeared the comment immediately following from a Canadian friend. Discussion thereof is appended.

The Wenzel projectors as first received here had the conventional rear 90° shutter blade installed. Using a piece of fibre as a test blade, I found it possible to cut 1¼" off each corner of the outer edge of the shutter to a point toward the hub corner of the blades. Titles and pictures are sharp, as with the full 90° blade, with no visible trace of travel-ghost or trembling, despite what Robert Mitchell says (IP for September 1952). In my opinion, a very small amount of "ghosting" is permissible without being noticeable to the audience.

The arclamps in use here are the usual high-intensity, with Strong 14-inch reflectors, two separate carbon-feed motors, each with its own rheostat. The lamps are intended for use with the usual 6-mm negative and 7-mm positive carbons. Jaws of the negative carbon holder can hold a 7-mm carbon as easily as a 6-mm; and it was found that a 7-mm carbon in the negative side in place of the 6-mm not only gave a slightly brighter screen, but the two 7-mm carbons gave a steadier light with less critical carbon position setting.

Also, carbon consumption dropped considerably. Carbon consumption for a 2000-ft. reel is ½" of negative and 1½" of positive. These figures can be vouched for by brother projectionists. Lamp voltage is 27 at 40 amperes. Carbons used are National Suprex.

K. C. BRIDGES

P. O. Box 25, Exeter, Ont., Canada

MR. BRIDGES watches the picture exclusively from the projection room; but R. A. Mitchell probably checks projection quality once a week by watching the picture from the stage while an assistant runs off two reels. Most projector manufacturers, like Mr. Bridges, permit a "small amount of ghosting," thinking that it has no adverse effect on picture quality—but we old-timers know better.

When all "ghost" has been removed by increasing the width of the shutter blades, the complete disappearance of all trembling of bright objects (visible from the front rows) and all flicker, due to slight unavoidable backlash in the shutter gears, and of all flaring (which looks like a slight out-of-focus haze on the tops and bottoms of white letters in titles) leaves no doubt about improved picture quality.

Viewing Distance Important

When Mr. Bridges can project a plain black-and-white title and have it appear exactly the same as a projected motionless slide, so much the same that it would be impossible to detect any differences, *then* he will find that his shutter blades are wider than he thought. It should be understood that I am referring to a picture viewed from the auditorium no farther back than the center. After all, "travel-ghost" sufficiently pronounced to annoy practically all patrons in the audience, may be invisible to the projectionist *in the projection room*, who is viewing the picture through glass ports.

In a different light, what does Mr. Bridges think that he gains by slightly trimming the blades? An increase in light? Not unless he can increase the light by more than 5%, the smallest increase detectable to the eye.

Perhaps you should publish a warning to projectionists who itch to trim shutter blades, as follows: Don't invite trouble by being fancy-free with the tin-snips.

Suggested Test Procedure

When using a test shutter made of sheet metal or fibre material, run plain black-and-white titles, remove the glass from the observation port, and examine the image for tremble, flare, haze and "ghost." The front of the auditorium is the best observation post. If any trace of haze, flare, or "ghost" shows on the tops and bottoms of the white letters, the blades are too narrow.

Test again, using wide blades. Condition the eyesight to detect trembling of the tops and bottoms of the letters by first looking directly at an ordinary 100-watt light bulb turned on. This will temporarily reduce persistence of vision. Cut the projector shutter to match exactly the satisfactory test shutter.

Every precaution should be taken to have both the master and cutoff blades exactly the same width. Even as little as 1/32-inch difference in the average width of the two blades will introduce 24-cycle flicker—the greater the difference in the size of the two blades, the stronger the flicker. An untrained projectionist is not competent to tamper with the shutter.

I trust that Mr. Bridges is not like the projectionist who once removed the shutters entirely from his projectors and tried to convince me that the picture was much clearer and brighter without them. He couldn't tell travel-ghost from dirt on the port glasses—or on the lenses. In fact, he thought that if one goosed a "travel-ghost" one got a handful of sheet.

VERITAS

VALHALLA, U. S. A.

The Vanishing Documentary

Almost unnoticed amid the furor over what to do about television and ballyhoo surrounding 3-D films, the documentary film has been slowly dying. Only a few years ago, March of Time and This is America series were often booked in as many as 11,000 of the nation's 17,000 to 18,000 theatres. Now both are gone and surviving documentaries are unlikely to run in more than 4,000 theatres, according to a recent survey by the *New York Times*.

The interest and excitement that the expanding fact-film market inspired in the 1930's and especially in the war years, when the big boom was on, are no more. The brave disciples of such arty documentary makers as the late Robert Flaherty are lonely and scattered to the winds, or to be more exact, working for TV studios and video film makers.

The reasons for the decline of the documentary are complicated. Exhibitors and distributors claim that the double feature takes too much time to leave any room for documentaries. They also state that the trend is only a reflection of public demand. Audience interest in fact films is said to be generally very low. Of course, television is also blamed because networks carry many pictorial-journalism shows.

IN THE

SPOTLIGHT

THE trouble with most of us is that we miss our friends most keenly in the abstract—usually when they are gone. The speeches, the nods, the genuflections, and the civil courtesies extended to the living as a matter of form somehow seem to be erased at the moment of death.

We should feel badly if we did not record in this space the death of former Senator Robert F. Wagner, of New York, on May 4. His contributions to the welfare of the common man are woefully served by these few lines.

• For the past year many conferences were held between the New York City Department of Commerce and the various labor organizations interested in the motion picture and television production center planned for N. Y. City. The proposed center, tentatively named Tele City, is expected to occupy a 250-acre tract and cost an estimated $100 million or more. An understanding, designed to eliminate any jurisdictional problems that might arise, is sought with the interested labor unions.

• More than 225 people attended the recent dinner-dance held by the B. C. Projectionists Credit Union, an organization of members of Vancouver Local 348. The affair, the first of its kind for the Credit Union, was in charge of Local 348 members Denny Brewer, Ray Lowdon, Donn Foli, Geo. Wardrop, and Fred Hirtle, who did a magnificent job in providing the guests with a delightful evening's entertainment.

• *Out-of-Town Visitors to the Offices of* IP: Len Humphries, member of Toronto Local 173. Humphries was hospitalized for several weeks and his visit to N. Y. was in the nature of a celebration of his complete recovery.

• Clyde Cooley, secretary for Local 343, Omaha, Nebr., is kept pretty busy these days jumping from one part of the country to another attending the various industry conventions. Following his attendance at the recent SMPTE Convention in Los Angeles, he plans to take in the Variety Club meeting in Mexico City, May 18-21.

• R. K. ("Red") Lewis, business representative for Local 84, Hartford, Conn., was named executive board member of the Hartford Central Labor Union.

• Hugh Sedgwick, 8th IA vice-president and former business representative for Local 303, Hamilton, Ont., reports excellent progress in combatting NABET's hold on Canadian Tv technicians. Back in 1949 the Alliance announced its intention to organize Canadian Tv, but the protracted illness of the late William P. Covert, IA vice-president in charge of the drive, impeded progress. Matters were more or less at a standstill until Sedgwick's appointment to succeed Covert, who died in January 1952.

For the past year Sedgwick has devoted most of his time to winning over to the IA the programming personnel in Tv studios. Although NABET made considerable headway in organizing the Tv technicians during the period of IA inactivity, the IA has recently applied for certification to represent Tv engineers in radio stations in several cities. It is confidently believed that from here on in the Alliance will make rapid strides in regaining lost ground.

BUFFALO BISON WITH EQUINE PAL

Elmer C. Winegar, treasurer of Buffalo Local 233, patting the nose of one of the beautiful horses in the recent annual Shrine circus parade. Winegar served as director general of the event.

• Because San Francisco Local 162 insisted that the management of the Coliseum Theatre, where the 3-D picture "Bwana Devil" was scheduled to be reshown, pay the projectionists for the extra time involved in preparing the show, the picture was withdrawn. Local 162 contends that the extra services performed by the projectionists before each showing of a 3-D feature calls for extra compensation—in this particular instance an hour overtime pay.

• Laboratory technicians employed by the Jam Handy Organization in Detroit, Mich., were granted a 10c per hour pay increase on the basis of the cost-of-living contract with LT Local 737.

• Testifying before the Senate Committee on Labor and Public Welfare on the Taft-Hartley Act, IA Representative Roy Brewer stated that the Communist infiltration of motion picture unions was overcome by the combined efforts of the various AFL unions involved. Brewer appeared before the Committee together with Walter Pidgeon, president of the Screen Actors Guild, and Jack Daley, Jr., Guild secretary, who voiced their objections to the loophole in the T-H Act in which 30 days is set as the period during which an employe must join the union where a union shop is in operation.

Pidgeon suggested that, since many pictures are completed within a few weeks, or even days, the 30-day period in the Act be reduced to 7 days. It was pointed out that the Act as it now stands permits hundreds of non-professionals, who have no intention of making acting their profession, to take jobs away from professionals, many of whom are "bit" players earning less than $5,000 a year. Brewer was in complete accord with this suggestion and also recommended amending the union security feature of the Act to "permit unions to enter into preference of employment agreements in connection with hiring hall or union dispatching arrangements."

• The N. Y. State Assoc. of Motion Picture Projectionists held its annual Spring meeting at Frank's Tavern, Middletown, N. Y., on the 11th of this month. Middletown Local 311 went all

All This & Texas, Too

"The enclosed check for $266, which covers the renewal subscription for our entire membership, is tangible evidence of Local 279's continuing support of IP. We feel that this gesture is small enough recompense for the benefits our members derive from the excellent technical articles which appear regularly in IP."

E. J. MILLER
IA Representative; Houston
L. 279, Business Representative

out in providing entertainment for the visiting delegates and their guests. A buffet supper wound up the afternoon's business session, followed later by a midnight banquet. This was the first Association meeting in Middletown and it is one that will long be remembered as one of the most outstanding and successful meetings, technically speaking, ever held by the organization. Details of the meeting will be discussed in our next issue.

• Our attention was directed recently to the activities of Joseph Cohan, member of Boston Local 182, who spends a great deal of his own time in helping to lighten the burden of his less fortunate fellowmen. For some time now he has been in charge of the weekly movie shows for the inmates of the House of Correction on Deer Island (in Boston harbor). As a direct result of Cohan's appeal for donations to the Red Cross blood bank, the prisoners recently voluntarily donated about 300 pints of blood. This is an achievement of which he is justly proud.

• Burglars had a field day when they cracked open the safe in the offices of Local 170, Kansas City, Mo., and made off with about $1,000 of the Local's funds.

• Labor's League for Political Education 1953 drive for voluntary contributions of $1 from each AFL member has begun and all union members are urged to take part in this nationwide movement. These contributions help labor fight the various anti-union legislative measures that are introduced from time to time. Tougher labor-management laws have already been passed in several states, and a number of Congressmen have expressed their determination to tighten the Taft-Hartley Act.

• The controversy between Local 202, Waterloo, Iowa and the management of the Paramount Theatre involving wages for the projectionists running the 3-D feature, "Bwana Devil," was settled with the granting of a 10% increase.

• Senate Bill No. 422, calling for an increase in license fees for motion picture projectionists, was introduced last month in the Pennsylvania State Legislature.

Anent Shutter Blades

The basic reason we have a shutter on projectors is to cut off light during the time the film is moving past the aperture. Without a shutter, the image on the screen would be afflicted with "travel-ghosi" and the image would be streaky because we would actually see the film move on the screen. To avoid "travel-ghost", only one blade is needed on a shutter. This blade is called the "master."

However, a shutter with only one blade would cause a problem. There would be a strong flicker effect because the eye would detect the light-dark periods on the screen in the same way that we detect differences in the light intensity when we watch an electric bulb connected to a 25-cycle current.

Light-Dark Frequency

In order to eliminate flicker, we have to increase the number of light-dark periods per second. An action of about 50 cycles a second will produce a smooth (flickerless) picture at the average theatre light intensity. To accomplish this, more than one blade is needed in the shutter.

In the silent days, projectors ran as slow as 60 feet per minute, or 16 frames per second. At that speed, 3 blades were necessary. With a 3-bladed shutter, we have 48 light-dark periods per second (3 x 16=48).

But since sound projectors have been standardized to run at 90 feet per minute or 24 frames per second, the 2-bladed shutter accomplishes the same thing, 48 light-dark periods per second (2 x 24 =48). Therefore, all sound projectors now have a 2-bladed shutter.

SAM GLAUBER
Paramount Theatre, N. C. City

IA ELECTION

LOCAL 433, ROCK ISLAND, ILL.

Edward A. Short, *pres.*; Richard T. Murphy, *vice-pres.*; Geo. A. Stoddard, *rec.-sec.*; Kenneth L. Benedict, *fin.-sec.*; Lloyd Burrs, *treas.*; Fred R. Parker, *bus. rep.* and *member of exec. board.* Trustees elected are Clifford L. Harder, 3 years; Frank A. Berry, 2 years, and Kenneth L. Horton, 1 year.

HERBERT GRIFFIN

HERB GRIFFIN passed away on May 6, at Santa Monica, Calif., aged 66, following recurrent heart attacks. These are the dismal facts concerning a personality who for 45 years contributed so much to the development of the visual-sound projection art. At his death he was vice-president and a director of International Projector Corp.

Born in London, England, in 1887, Griff was educated there and in the U.S., following which he was associated with several engineering firms. The comparatively new art of motion pictures early claimed his attention, and in 1915 he joined Nicholas Power Co., makers of projectors which are hailed today by old-timers as a superlative mechanism.

Herbert Griffin

Inherent restlessness overtook Griff in 1916, so he accepted the post of director of motion picture activities for the joint effort of the AEF-YMCA and thereby wound up in Siberia—not as an internee. Griff returned to Nicholas Power in 1919 as director of sales and engineering, and continued on in the same capacity when the firm was merged with International Projector Corp., makers of Simplex projectors.

Griff was virtually Mr. Simplex during the ensuing years until 1936, when he was elected a vice-president and director of the firm, after which he served in many and varied capacities for the parent organization, General Precision Equipment.

Griff's professional and fraternal associations were many, and here will be mentioned only a few: charter member of IA Local 306, N. Y. City; chairman, projection committee, Projection Advisory Council; member, Academy of M. P. Arts & Sciences; member, Veterans of Foreign Wars; president, SMPE 1943-44; president, Librascope Corp., Burbank, Calif., and, as previously mentioned, v-p and director of International Projector Corp.

He who initials these few words will say only that as a "technical bum" he was nutured in the art and craft of projection by Griff, and that he has his thousands of counterparts all over the world who have profited by Griff's teaching for more than 25 years. Griff enriched the art and the craft, but so great were his contributions thereto that one is constrained to utter only an humble "thanks" and God-speed.—J. J. F.

Vital Need for 3-D Standardization Emphasized at SMPTE Gathering

INDUSTRY-WIDE standards for the new motion picture techniques were seen as a vital need by Mitchell Wolfson, prominent Florida exhibitor and former president of the Theatre Owners of America, when he addressed the semi-annual convention of the Society of Motion Picture and Television Engineers which ended in Los Angeles early this month.

Mr. Wolfson warned his audience that the industry may tear itself apart if it tries to "fly off in all directions at once" in its rush to embrace new methods of creating realism. There may be some who are "egging you on with the 'hurry-y-y, hurry-y-y, hurry-y-y' of the circus barker," he declared, "but the industry must take time to separate fact from fancy and the workable from the unworkable.

"Our heads are spinning with the varied formulae being hurled at us," he said. "We hear of screen proportions of 4 by 3, 5 by 3, and 8 by 3. We invite engineers to survey our theatres and tell us just what we need, and they tell us they wouldn't know what to survey if they came. They advise us to insist on standards. We cannot afford to, nor will we, change our projection room equipment and our screen every time we start the run of a new motion picture."

What Industry Needs

Mr. Wolfson charged the technical leaders of the industry with the responsibility for four specific undertakings:

(1) Standardization; (2) an improved light source; (3) a "compatible" screen for 3-D, panoramic, and conventional pictures; and (4) an educational program to insure the most effective use of new developments.

"*After standardization,* and I want to put special emphasis on those words," he said, "our problems seem to come in this order:

"First, we need an improved light source: greater and more even brilliance coupled with either an adequate cooling apparatus or film gates and film that can endure the higher temperature without harm. And an important part of this improved light source is a power supply of sufficient capacity and reliability.

"Second, we need a not-too-costly screen with a picture surface which will be compatible with both the new pictures and films as we now know them. This screen must have the further qualifications of being suited to the structural limitations of most existing theatres. Of course, all these visual improvements must be accompanied by stereophonic sound at a *reasonable cost.*

"Third, you who create must also educate. When you have accomplished standardization, adequate light and power, and suitable screens and sound, then you must embark on a widespread but simply worded educational program so that these things to which you have given so much of yourselves will not suffer through misuse."

Drive-in Problems

Mr. Wolfson also commented on drive-in problems. New viewing techniques are not "as immediately important" for them as they are for indoor theatres, he stated. Two things of a technical nature that they do need, he continued, are an improved light source and further development of rear projection which might permit shows to begin earlier in the evening and perhaps solve other problems. The trend in drive-ins is toward the "twin" type which promises better picture definition for viewers and some economies for the operators, he believes.

Of more than passing interest was the following interview with Dr. Leslie Knopp, president of the British Kinematograph Society, who attended the convention. Dr. Knopp asserted that American motion picture producers stand in danger of losing world markets for the new large-screen presentations unless they begin to think *in terms of standards* applicable to theatres throughout the world.

In urging caution, he pointed out that foreign houses are physically unable to accommodate the large screens required or, as in England, find it virtually *impossible by law* to spend the large sums of money required to alter and equip their theatres. English exhibitors, he said, can spend only $1,500 per year for alterations, equipment and maintenance work. To spend more, they must apply for a special license from the ministry of works and, even then, can spend a maximum of only $15,000.

International Standards

It is of the utmost importance, Dr. Knopp said, that an immediate approach be made to the problems of *international standards.* With this in mind, the British Kinematograph Society has already been circulating a questionnaire to exhibitors to determine the sizes of screens their houses can accommodate. The same questionnaire is being circulated on the continent. The SMPTE is also planning to undertake circulation of a similar questionnaire in the United States, it was disclosed.

Dr. Knopp noted that an aspect ratio of about 2 to 1, or 2.2 to 1 could be accommodated without serious alterations, and declared that a screen of this proportion would not seriously diminish the impression of realism. Screen dimension, he said, must also be related to seating capacity, in addition to structural limitations. Excessive screen width, he asserted, results in loss of effective seating accommodations.

An interesting comment on stereo pictures was made by Dr. Knopp. "Both in England and the U. S., the public has complained that the wearing of spectacles produces headaches," he said. "If this becomes widespread, it would do the cinema much harm. It is not the wearing of Polaroid spectacles that causes the headaches—it is the human weakness of producers to show off their new toy.

"The audience is called on to perform the most unnatural optical gymnastics, not only calling upon the eyes to converge and diverge in quick succession, but to cause the spectator to try to increase the distance between his eyes from the normal 2½ inches to over 6 inches."

Appended are abstracts of additional papers read at the convention. (Other abstracts appeared in IP last month, April.)

PUSH-PULL NEGATIVE TRACK RECORDING

Murray Dichter and William H. Unger
Dichter Sound Studios, New York, N. Y.

A method is described for recording from magnetic tape onto push-pull negative film. The densities of negative and print are adjusted so that either 100-mil standard or 200-mil push-pull play-back may be used.

This provides a high-quality track for re-recording or standard track for review purposes, or for release printing.

CORRECTION OF FREQUENCY-RESPONSE VARIATIONS CAUSED BY MAGNETIC HEAD WEAR

Kurt Singer and Michael Rettinger
RCA Victor Div., Hollywood, Calif.

Wear on a magnetic recording head reduces the front gap pole face depth and thereby produces an increase of the gap reluctance. This in turn produces a higher effective bias flux which has an erase action and thus tends to attentuate the high frequencies as they are being recorded on the recording medium.

It is the purpose of this paper to present these performance variations as a function of the lowered inductance associated with head wear and to show how, simply through a correction of bias current, proper performance can be restored.

MICROPHONES, LOUDSPEAKERS AND AMPLIFIER FOR USE WITH STEREOPHONIC REPRODUCTION IN THE THEATRE

John K. Hilliard
Altec Lansing Corp., Beverly Hills, Calif.

This paper will describe microphones, loudspeakers and amplifiers now being installed for stereophonic reproduction of motion pictures in theatres. Detailed characteristics of the individual components will be analyzed along with methods of providing proper equalization. Typical installation methods will also be outlined.

MULTIPLE-TRACK MAGNETIC HEADS

Kurt Singer and Michael Rettinger
RCA Victor Div., Hollywood, Calif.

The object of this investigation was to devise an economical construction method for multiple-track magnetic heads used in recording on 35-mm perforated magnetic film, particularly when such (reproducing) devices are used in a theatre for the stereophonic presentation of motion pictures.

A NEW ZOOMAR LENS FOR 16-MM MOTION PICTURES

Frank G. Back
Zoomar, Glen Cove, N. Y.

A new 16-mm Zoomar lens will be demonstrated. It has a speed of *f*/2.8 and a zoom range from 1 to 3 in. It is considerably smaller and lighter than the old 16-mm Zoomar and its picture quality has been improved to such an extent that in every zoom position it is comparable to the picture quality of a standard lens. It can be used at its full aperture of *f*/2.8 without loss of image definition. Its transmission loss is not greater than that of a standard camera lens and it therefore works under any lighting conditions where standard *f*/2.8 lens can be used.

A TRANSMISSION DENSITOMETER FOR COLOR

K. G. MacLeish
Eastman Kodak Co., Rochester, N. Y.

The need for unification of density measurements made in numerous and widely separated laboratories led to the development of the Eastman Electronic Densitometer Type 31A. This densitometer reads diffuse densities of color films from 0.0- to 4.1 through narrow-band color filters, with a standard deviation of ± 1 per cent among different instruments. The construction and performance of the densitometer are described.

'House of Wax' Critique

Now that three pictures using the Polaroid 3-D process have played to large audiences in New York City, this type of film is beginning to lose its advantage of novelty, at least in the eyes of the critics.

The reviewers are no longer intrigued by talk of "revolutionary" developments in the industry and are starting to complain loudly about technical flaws they find in 3-D and stereosound, as well as about the hackneyed story material used to exploit the new processes. Here are some comments by the film critics of the *New York Times* and *Herald-Tribune* on Warner Brothers' "House of Wax."

Bosley Crowther, veteran *Times* critic, said his hopes for 3-D "went kaput" after seeing "Wax." "Apart from the fact that, it is baldly, unbelievably antique in its melodramatic plot and style," he continued, "it shows little or no imagination in the use of stereoscopic images and nothing but loudness and confusion in the use of so-called stereophonic sound. The impression we get is that its makers were simply and solely interested in getting a flashy sensation on the screen just as fast as they could.

Times Critic Depressed

"Obviously, such a lurid story does lend itself readily to the full-bodied realistic treatment potential in stereoscopy, and the Warners . . . have given it the technical 'works.' In the new Eastman color and 3-D, the human figures look round and firm, and the ghoulish episodes and scenes of incendiarism develop an additional power of shock. But the effect is little more exciting than any perceptible improvement in color might have achieved, and actually the advantage of color is here offset to some extent by the dark Polaroid glasses one has to wear. Clearly, nothing of an inventive nature has been done with stereoscopy. Also, some people say the system strains their eyes.

"And certainly the stereophonic sound with which 'Wax' is dubiously endowed causes strain on the ears in a measure which may give some auditors actual pain. With sound outlets all around the theatre, the noises come not only from the screen, where the visible action is appearing, but often from the sides and back walls. Turned on full blast, when the fire is roaring or when the villain is about to plunge the girl in boiling wax, the effect is not only near deafening but appreciably exhausting to the nerves.

Stereosound Distracting

"As for the promised potential of this multiple-outlet system to achieve a greater dramatic realism by controlling the direction of sound, it is hardly demonstrated in this picture. When a voice suddenly speaks from the left wall of a theatre before an actor enters from the left side of the screen, the illusion is far from that of a person entering. It is that of a disturbance in the side aisle; and when noises suddenly boom from the back of the theatre, they have no relation whatever to the screen, even though they're supposed to be created by actors who just went thataway.

"Directional sound has potentialities, but the whole theatre is too large a frame—at least so long as the image area remains the conventional size screen.

Stories Are Throwbacks

"Surely the new age of movies will not come in such films as 'Wax' or Columbia's little 3-D shocker, 'Man in the Dark.' These represent depressing throwbacks to the content and style of bygone days."

In the *Herald-Tribune*, Otis L. Guernsey, Jr., is even more emphatic in his opinion of "Bwana Devil" "Man in the Dark" and "Wax," the three stereo pictures that he has seen.

After viewing them, he asserts, "one is tempted to arrive at definite conclusions about this new wonder medium, the wonder being that anyone would take it seriously except as a temporary fad. These conclusions might be arranged as follows:

"1. It is a nuisance.

"2. It detracts more from the cinema than it adds.

"3. No one has yet made the good picture that seems certain to prove stereoscopic 3-D is just so much excess baggage.

"In the case of 'Wax' at the Paramount, there is the added distraction of Warner-Phonic sound, with audio outlets planted all over the theatre. It makes for deafening volume in scenes of high melodrama in this story about a crazed sculptor and his ghoulish wax museum; and it drags the attention away from the screen with voices and footsteps coming from the back and sides of the theatre. The screen is and should remain the center of attention, and the sound gimmick is as distressing as stage direction which causes actors to run up and down the aisles."

ARMY PROJECTION IN KOREA

The Army projectionist is just about the most popular man in his unit over in Korea. Anywhere from the front lines back, at anytime of the day or night, you are apt to come upon a G.I. audience watching a film, with many men attending seven days a week. Shows are given outdoors, in tents, Quonset huts or any place that a projector can be set up. About 2,000 prints are circulating in Korea, and four new feature programs arrive each week from Hollywood.

History of the American Labor Movement

Prepared by the U. S. Dept. of Labor, this history traces labor activity and legislation from Colonial times to today.

Chapter IX. AFL and CIO Cooperation

IN 1949, representatives of the free trade unions joined in forming a new International Confederation of Free Trade Unions. The AFL, CIO, and the United Mine Workers cooperated in the formation of this organization, which represents an estimated 51 million workers in about 60 countries outside the Communist sphere of influence. The ICFTU is committed by its constitution to support "the right of all peoples to full national freedom and self-government" and to "champion the cause of human freedom, oppose and combat totalitarianism and aggression in any form."

In January 1948, the AFL, the Railway Labor Executives' Association, and the International Association of Machinists joined with labor movements from a number of Latin-American countries to establish the Inter-American Confederation of Workers which in January 1951 was absorbed by the newly formed Inter-American organization of the ICFTU. This regional organization claims to represent about 20 million.

The AFL has also played a conspicuous role in the International Labor Organization (ILO) since the United States became a member in 1934. This world-wide organization, with a membership from 62 countries, considers measures and carries on programs designed to improve labor standards and working conditions on an international scale. Annual conferences of worker, employer, and government delegates are held and a permanent headquarters is maintained in Geneva, Switzerland.

The Communist Problem

Organized Communist activity as it exists today in the American labor movement dates from November 1920, when the Trade Union Education League (later, the Trade Union Unity League) was founded. The TUEL at first rejected the theory of dual unionism, and adopted a policy of "boring from within" established unions. Its efforts failed.

With the organization of the TUUL in 1929, the Communists for a time abandoned their previous tactics and sought to establish industrial unions independent of the AFL. This attempt to split the union movement likewise failed.

After the CIO was formed, the Communists shifted most of their interests to that organization. Some of them became organizers and national union officers. As time passed it became evident that they were less interested in legitimate union activities than in the advancement of the "party line." Their espousal of Soviet Russia became increasingly distasteful to the CIO leadership and the rank-and-file membership.

Left-Wing Unions Expelled

Final expulsion of the Communists from positions of control in the CIO was assured when the CIO convention in the fall of 1949 adopted a constitutional amendment barring from office in the national CIO any individual "who is a member of the Communist Party, any fascist organization, or other totalitarian movement" or who "consistently pursues policies and activities" followed by such organizations.

Two other constitutional changes empowered the CIO executive board to remove, or refuse to seat, offending officers and to revoke the charters of affiliates found guilty of pursuing policies or engaging in activities prohibited by the CIO's non-Communist amendment.

Directly connected with the Communist issue was the expulsion by the convention of two affiliated unions, the United Farm Equipment and Metal Workers, and its third largest affiliate —the United Electrical, Radio and Machine Workers.

Action by the CIO executive board against the remaining unions charged with Communist activities followed during the early months of 1950. The International Union of Mine, Mill and Smelter Workers was expelled February 15, 1950. The Food, Tobacco, Agricultural and Allied Workers Union of America, the United Office and Professional Workers of America, and the United Public Workers of America were expelled March 1, 1950. The American Communications Association and the International Fur and Leather Workers' Union of United States and Canada were expelled June 15, 1950. Three additional unions, the International Longshoremen's and Warehousemen's Union, the National Union of Marine Cooks and Stewards, and the International Fishermen and Allied Workers Union of America, were expelled on August 29, 1950. The last-mentioned union, however, merged with the ILWU, effective July 1, 1950.

In taking this series of actions against its left-wing affiliates, the CIO executive board noted six periods during which the expelled unions followed Communist Party policy after the mid-30's. These included (1) the prewar period of collective security; (2) the period between the Soviet-Nazi pact of 1939 and the invasion of Russia by Germany in June 1941; (3) the period between June 1941 and the attack on Pearl Harbor, December 1941; (4) the period between 1942 and June 1944, during which Communists constantly called for opening a second front; (5) the period after the Tehran Conference when the Communists called for complete cooperation with the capitalist class; and (6) the postwar period characterized by increasingly sharp criticism of American foreign policies and labor's espousal of the Marshall Plan.

Will Labor Unite?

Efforts toward labor unity have been made repeatedly since the late 1930's. At first, the differences stemmed primarily from the views of the AFL and CIO on the industrial organization of mass-production workers. As the years have passed, the importance of this issue has diminished. Later discussions, started during the Second World War,

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Altec's 'All-Out' on Stereo Sound

Altec seemingly is sparing no effort or expense in its drive for industry-wide use of stereophonic sound. Staff members recently attended the M.P.T.O.A. of Virginia sessions at Old Point Comfort, Va., as the first of such meetings designed to acquaint exhibitors with the low-down on stereo sound. Also, Bert Ennis, well known industry publicist and former assistant advertising manager for Paramount Pictures, has been engaged to launch a special promotional campaign on behalf of the new sound system.

have turned to problems of a procedural nature. For example, the AFL desires "organic" unity, while the CIO favors "programmatic" unity; that is, cooperation on specific issues—whether legislative, political, or international—with organic unity to come at an indefinite future date.

In spite of the appearance of continued disagreement, the two organizations are, in fact, drawing closer together. The expulsion of Communist-dominated unions by the CIO removed one of the principal barriers to unity. The AFL and CIO cooperated during 1949 in the establishment of the International Confederation of Free Trade Unions. They have worked together in other ways to combat Communism and to promote democracy and improved living and working conditions in other countries.

In political and legislative activities leaders of the LLPE-AFL and PACCIO work together. Joint labor committees have been established in various localities to promote a unified political program. The passage of time and emphasis upon current problems have also tended to reduce the differences over craft or industrial unionism.

Late in 1950 organized labor's growing concern with the Government's emergency defense program brought the AFL and CIO together in a United Labor Policy Committee. This Committee, which also included the Railway Labor Executives' Association, served as a common spokesman for the affiliated groups. It spoke out strongly in favor of greater representation of labor in the various defense agencies and demonstrated the ability of the several labor groups to join forces and pool their views in a common objective.

[CONCLUSION]

Tv Film Men Hear Goldsmith

Dr. Alfred N. Goldsmith, chief consultant to Radio Corp. of America, headed a panel of scientists who spoke on engineering as applied to films on television at the recent National Television Film Council meeting. Other speakers were John Stott, Tri-Art Color Corp.; E. M. Stifle, Eastman Kodak Co.; Dr. Peter C. Goldmark, CBS Laboratories; C. Craydon Lloyd, General Electric of Syracuse, and Frank Marx, American Broadcasting Corp.

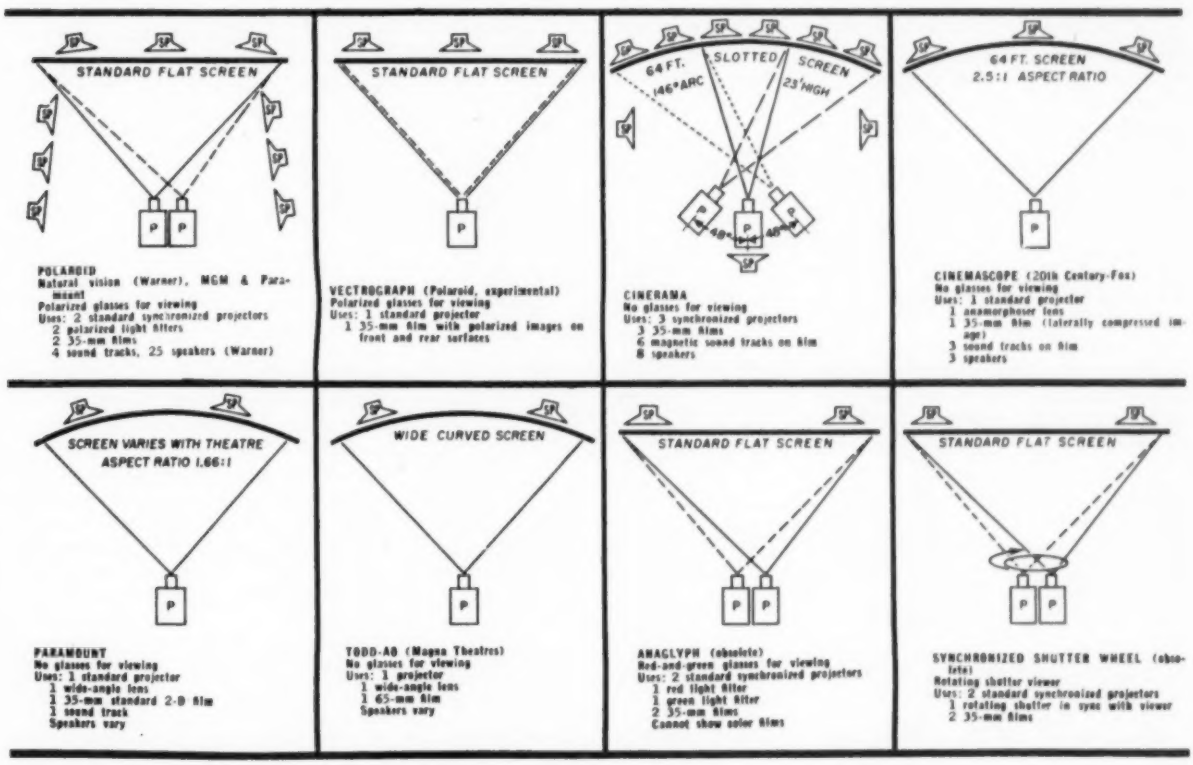
Tax Receipts Up for February

A slight upward trend in the amusement business for February was reflected in the 20% admission tax receipts. March collections, which generally reflect February at the boxoffice, were recently reported by the Bureau of Internal Revenue.

March receipts came to $21,031,714 which was about $400,000 better than the previous month and nearly $1,200,000 above collections of March, 1952. About 75% of the figure is estimated to come from motion pictures.

Graphic Outline of Various 3-D and Wide-Screen Processes

Herewith is presented a graphic representation of the various "new" visual and sound production-reproduction and projection systems made available by our esteemed colleague, *Tele-Tech* magazine (May 1953). These diagrams provide a concise visual wrap-up of what is boiling in the current technological cauldron. Two of the systems outlined, the Analglyph and the synchronized shutter-wheel system are now obsolete; and another, the Vectograph, is old-hat suitable primarily for still pictures. In general, these drawings present a clear picture of what was, what is, and what might happen in the 3-D and wide-screen fields.



MONTHLY CHAT: Progress Report

(*Continued from page 5*)

the full width of the picture. Our eyes just couldn't encompass such a visual expanse by employing normal viewing.

Now, if 20th Fox *does* modify the CinemaScope aspect ratio, and if it be a fact that the vast majority of motion picture theatres cannot possibly accommodate a screen of, say, more than 25-30 feet in width, why should it be necessary to utilize the compression-expansion Chretien lens about which 20th Fox has kicked up such a fuss? The grain properties of present-day film permits we dumb projectionists to still set about employing the time-honored practice of filing an aperture plate and getting whatever size screen image we elect—particularly when Hollywood plans to shoot all future stuff so as to prevent any loss of significant visual detail, notably cutting off the heads of characters.

Once these production-exhibition toppers get together on some sensible standards program, we may sit back and relax secure in the knowledge that with one new screen and, possibly, a new pair of lenses, we can show anything that comes down the pike, including 3-D. Of course, a 4-projector setup will be required for 3-D if we are not to be forced to have intermissions in the presentation.

20th Fox's proposal to license other major producers for shooting pictures with its special cameras and showing them with its special lenses leaves us a bit bewildered in view of the foregoing discussion of aspect ratio, *etc.* Just what would be licensed?

CinemaScope Dissected

Other impressions of the Cinemascope showings at the Roxy (some improvement in the process is not impossible before any widespread distribution of such pictures is made):

1. There definitely is a center hot-spot on the screen, with the light fading fast toward the sides. This we expected with the wide expanse of screen and with the lens setup.

2. Definition definitely not good, although the use of color subjects exclusively minimized this shortcoming.

3. The curve of the screen was too deep, about 5 feet at the Roxy, and while necessary for this vast expanse, it irritated us because we were always conscious of it.

4. The joining seams of the screen were clearly visible, but 20th says this will be corrected.

5. Light level of about 5-6 foot-lamberts quite low, but better than we expected 20th to get.

6. Pronounced distortion over a substantial area at each side of the screen.

7. All intimacy was lost for this viewer, and we doubt that anybody will experience a sense of intimacy with a 65-foot screen image, *ala* Niagara Falls.

8. The stereophonic sound presentation was again mangled; of this more anon.

General estimates for a CinemaScope installation run as follows: for the largest theatres, $25,000; for houses of 1500-2000 seats, $15-17,000, and for the smaller houses, $8-12,000. *These figures include stereo sound equipment.* Such figures are variable, because each house offers special engineering problems.

The installation pattern is as follows: an order for CinemaScope is placed with 20th Fox, which will then inform Altec, RCA and General Precision Labs, all of whom make stereo sound systems and can provide engineering advice and servicing. The anamorphic lenses and the "Miracle Magic" screen will be supplied by 20th to the equipment house having the deal. 20th has placed bulk orders for both items in order to cut costs.

Unique Sound System

But 20th Fox wasn't content with the CinemaScope splash at the Roxy. Shortly thereafter it announced that it has developed and is going ahead with a process for the placement on a single strip of 35-mm film *the picture image and four magnetic sound tracks*,—two on either side of the image, for stereo reproduction. Thus would be eliminated the extra magnetic strip carrying three sound tracks and the reproducer required therefor.

If successful, this system would effect a tremendous saving in installation and equipment costs; ditto in the studios and right down the line from processing laboratory through the exchanges and on to delivery costs. Ease of handling is apparent, and 20th Fox didn't fail to ballyhoo the savings in "manpower."

How does 20th Fox plan to accomplish this not inconsiderable feat? Well, they first would narrow the sprocket holes on regular 35-mm film from 0.110 to 0.078 inch. At the projector, the *width* of the intermittent and other sprockets must be reduced slightly, and a multiple film-driven soundhead must be installed between the upper magazine and the regular projection head. The new soundheads, said to be in production by General Precision, Altec, RCA and Westrex, will be part of the CinemaScope "package" deal.

No mention was made by 20th as to who was making the new sprockets or when they would be available; ditto for the supply of film with the new perforations. Other difficulties might arise in connection with proper sprocket tooth engagement for *both* new and old perforations, and in the fact that the steel used in the sprockets might as a result of close proximity demagnetize the magnetic tracks. 20th Fox assures us that they have both problems licked, but they don't say *when*. IP will have a long look-see at this situation and render a report as soon as possible.

To round up the 20th Fox position, it would seem that if it gives attention to the present CinemaScope aspect ratio of 2.66 to 1 by reducing it to, say, 2 to 1 or even less, and if it keeps its picture width down to a reasonable figure, and if it puts across the four-track, single-film system, it might have something. We shall see.

Cinerama in Turmoil

Meanwhile, Cinerama, the three-camera, three-projector, stereo-sound system which started all this current fussing, has come upon evil days in terms of management headaches, lack of product, and financial worries. Top management has been drastically revised, and the early start Cinerama enjoyed on other wide-screen systems has been lost by an inexplicable failure to produce pictures.

Although a smash box-office hit wherever it has been shown, Cinerama spells MONEY in production and exhibition costs—quite apart from the dough required to outfit a theatre. Scenic stuff won't carry Cinerama far, and even if it should come up with spectacle stuff of the Broadway stage type, it is believed that there are only about 18 cities in the U. S. that could support such shows.

The Stanley Warner circuit in the Middle Atlantic area reportedly has taken over the distribution of Cinerama, with the first figure of 150 such theatres during the next year having dwindled to 50 and then to 25. Cinerama is big stuff for big cities at big money—and it has no product.

Elsewhere on the panorama screen front there were important doings. All major companies except M-G-M have ignored the CinemaScope offer of its facilities and have gone their separate ways. Here's how the other majors stack up in terms of aspect ratio preferences (keeping in mind 20th Fox's 2.66 to 1 ratio):

Paramount—1.66 to 1; RKO—1.70 to 1; Columbia—1.85 to 1; M-G-M and Warners—2 to 1. It will be noted that these figures are not too far apart, and it is likely that just a little giving and

taking all around could achieve unanimity for a standard ratio. There are indications that this may be in the making, for Leonard Goldenson, president of United Paramount Theatres, pitched directly to Nicholas Schenck, boss of Loew's, Inc. (which owns M-G-M) for an agreement on standards. Schenck backed away from such a deal with a "wait a little while" reply; but the significance of such an exchange should not be minimized.

Now if 20th Fox would relent a bit in its stiff-necked attitude of our-way-or-not-at-all, something wonderful for the industry could happen.

IP reiterates its opinion that for all aspect ratios from 1.66 to 1 up to 2 to 1, and given a sane screen width, there is nothing that cannot be licked by long-standing projection practice. A new screen and new lenses—and stereo sound if desired—and a theatre can play anything that comes down the road. Plus a projector interlock, of course.

IP holds that a projection system adopted by any theatre should have two basic characteristics: 1, it should fill the normal line of sight for a majority of the seats, and 2, it should be consistent with not ripping out a theatre's entrails by major structural changes. It can be done.

As for screen sizes for *all* types of pictures, IP's preference is as follows:

Small Theatre: 30 x 18 ft.
Medium Sized: 44 x 24
Large Theatre: 50 x 38

Stereosound Mishandled

The stereophonic sound process, in its earliest showings, has been the victim of frightful handling. This process has definite inherent worth and it can add immeasurably to the enjoyment of any picture. But this inherent worth is being throttled by grievous and incomprehensible mistakes on both the recording and reproduction ends. The chief defect in handling is the deafening volume level maintained—the boys have extra sound tracks and extra loudspeakers, ergo they must use them. Both the "House of Wax" and the CinemaScope showings were among the most irritating experiences one can have. Some of the directional sound emanations were just stupid and utterly silly.

It was not until we saw a special show staged by RKO in a N. Y. City theatre that we appreciated the worth of stereophonic sound, despite the obvious faults stemming from microphone placement in recording.

What we need and could have in a stereo sound system is *fidelity*, not deafening volume. It can be done.

There have no startling developments on the 3-D front. "Bwana Devil"

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Western Series

Travelogues

News

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and "House of Wax" still are packing them in, but indications are not lacking that the time will come soon when the novelty factor in the setup will collide head-on with the continuing acceptance by patrons of viewing spectacles. One thing is certain: the cheap cardboard viewers that must be held to the eyes must be supplanted by a more substantial viewer that has bows to enable proper fitting. IP understands that such a viewer is now available at a cost of 15 cents.

The question of projector interlocks for 3-D showings has induced much discussion in projection and equipment manufacturing circles. For its part, IP would not accept the mechanical interlock if it were at all possible to obtain a selsyn unit. Mechanical interlocks were all that were available when exhibitors were screaming for such units, so the equipment people cannot be charged with bad faith.

But if selsyns are IP's choice, it is quick to point out that even these units require some immediate changes. Selsyns were never intended for projection work, thus they turn over at 1220 r.p.m., as contrasted with the projection requisite of 1440 r.p.m. Nobody will be dreadfully inconvenienced by the selsyns now in the field; and IP is happy to report that General Electric will move immediately to turn out the units at 1440.

The light transmission of Polaroid filters is the topic of some interesting comment by Robert A. Mitchell elsewhere herein. Careful tests by him indicate that the transmission of Polaroid viewers and projector filters average about 40%. Having no commercial interest in the sale of these devices, IP points up this fact merely to emphasize the necessity for pouring on the light when projecting 3-D pictures.

With all this fussing about new processes, visual and sound, let's not forget that a bad picture cannot be helped by them and a good picture cannot be hurt by their absence. We're mindful of the fact that a *good* old-fashioned 2-D picture, "Moulin Rouge", is now in its 14th week at the Capitol Theatre on Broadway, N. Y. City, and that over on 52nd St. another *good* 2-D picture "Lilli", still is knocking them dead around the clock daily at $1.50 a head.

We wish wistfully that the dozen or so men whose aggregate income as "leaders" of the motion picture industry runs to several millions annually, and who meet socially with the utmost cordiality in Hollywood, in Miami and New York, in Paris and Monte Carlo and in Rome—we wish these fellows would spend about $25 for a hotel suite some afternoon and, with the help of a few first-class technical minds, reach a degree of agreement which would put an end to all this insanity. It's simply incredible that they don't.

JAMES J. FINN

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Foresee Need for Additional Projectors at 3-D Shows

To make possible 3-D showings without intermission, several large theatres will soon install two additional RCA projectors to provide a total of four in the projection room, it was reported recently by J. F. O'Brien, theatre equipment manager for RCA Victor.

After reviewing the 3-D situation, Mr. O'Brien stated, RCA decided that extra projectors offer the only practical solution to problems raised by 3-D film releases. They eliminate both the necessity for a break in the program to change film and the need for oversized film reels.

Installations Mounting

Mr. O'Brien also reported that RCA stereophonic sound systems were installed in four Texas theatres for the world premiere this month of Warner Brothers' first 3-D feature, "House of Wax." The houses converted are the Majestic in Dallas; the Texas in San Antonio; Palace in Fort Worth, and the Majestic in Houston.

A new theatre screen featuring a silvered surface designed to meet requirements of 3-D and wide-screen systems was also announced by RCA. It is suitable for all such systems, the company said, and is also recommended for 2-D presentations with suprex or high-intensity carbon arc light sources.

OBITUARIES

JOHN E. HAUSER, old-time member of Local 96, Worcester, Mass., died in his sleep on April 25. "Jack" Hauser served as an official of the Local for the past 30 years, and until two years ago he held the office of business representative. He was associated with the Poli circuit in Worcester for the past 40 years, having worked as stage manager at Loew's Poli Theatre for 26 years. In recent years, Hauser was active in charitable and religious organizations.

ERWIN L. DEFFA, 53, member of St. Louis Local 143, recently succumbed to a fatal heart attack. He was buried Friday, May 1 at the New St. Marcus Cemetery, located on the outskirts of St. Louis.

DRIVE-INS DISSECTED

(Continued from page 12)

ted view for each successive row of cars. The top of the car in front must not obstruct the view of the car in back of it, and so on out to the last row.

Probably the ideal grading system and land location is one where the screen sits on a slightly higher spot than the last arc of ramps and the ground gently slopes from the screen tower to the last ramp. This also simplifies the matter of drainage when it rains, a matter of no small importance.

If drainage is not adequate and the ramp surfacing not proper, a rainy evening and several hundred cars can make a quagmire of a drive-in besides creating much ill will and making necessary costly regrading of the ramps. If the natural over-all slope of the land will not provide surface drainage, an underground system of ducts is necessary.

Surface, Spacing of Ramps

The surface of the ramps and connecting driveways must be durable and not cause undue trouble while entering and leaving the ramps. Some deluxe places have asphalt surfaces, but the majority use a mixture of crushed rock, coarse gravel and sand coated over-all with heavy road oil and rolled. The oiling and rolling is repeated at intervals, depending on wear and tear and climate.

The ramps, previously defined as arcs of concentric circles, are usually about 40 feet apart to allow cars to enter and leave easily. The first ramps should be at least 100 feet from the screen; 130 to 150 feet is preferable. The effect is the same as when one sits in the front row of seats in the ordinary movie theatre.

Of the 40 feet allowed between ramps, about 18 feet is slanted and allowed lengthwise for parking the car. About 10 feet in width is allowed for each car and for placing the speaker posts and their concrete bases. The

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remainder of the ramp width and length is allowed for maneuvering the car into and out of the ramp.

The recommended procedure is to drive the car forward into the ramp, and when leaving, drive forward into the space ahead and out to the right. To back the car out of the ramp is not considered good form.

As mentioned earlier, the ramps must have a certain slope in relation to each other and to the screen. The profiles of ramps change at varying distances away from the screen and also at varying angles sidewise from a line perpendicular to the screen. Every movie patron is familiar with the distortion caused by viewing the screen from a seat at the side of the theatre, and the same effect is noticeable in a drive-in. For that reason cars are usually confined to an area of about 40 degrees on each side of a line perpendicular to the center of the screen center.

Modern Sound Speakers

The earliest drive-ins were primitive affairs and depended on the so-called "blast system" to provide dispersion of sound to the cars. Powerful speakers were hung on the screen tower and on poles scattered about the ramp area. With this method people nearest the speakers were blasted and jolted by the high level of sound, and people in adjoining homes and farms could hear the sound.

With the development of the in-car speaker each auto has a speaker with volume control available. Each speaker post has two speakers resting on it, thus one post serves two cars. When not in use, the speakers rest in cradles on the post top. The speakers are connected electrically to the post junction by flexible cables.

When in use, the speaker is lifted from its cradle and hooked on the car door, on the inside, by the rubber-covered hook on its back. When the patron is about to depart, he unhooks the speaker and replaces it in the cradle on the post.

Speaker Damage Common

This does not always happen. Frequently, through forgetfulness or malice, the car is driven from the ramp with the speaker still in place resulting in a broken speaker cable. The cost of such damage is an appreciable figure during a season, and various methods have been tried in an effort to prevent it.

One expedient that worked too well was that of attaching the speaker to the concrete base by means of a steel cable. When the auto was driven away with the speaker still on the door, something had to give way with the result the car door was damaged. In some cases car doors were damaged so badly that replacement was necessary. In one case a car door was torn completely off.

As far as the speakers themselves are concerned, on a day-in-and-day-out basis, the repairs are mainly to the volume controls, diaphragms, and loose connections in the wiring. If speakers of cheap construction are used, the outage time for repairs will average about 2% of the total speakers used, on a weekly basis. Better quality speakers will, of course, give better service and better customer satisfaction. At the end of the operating season the speakers are taken down from their posts and stored indoors.

Amplifier Output Distribution

The output of the amplifiers in the projection room is fed to the speaker post junction boxes by underground cables fanning out from the projection room. As a rule, the ramps are divided into sections with a separate feed line from that section to the amplifiers and controlled by a switch for each section. In that way a short-circuit or "ground" at some particular post will not disable the sound for the entire area, since the defective portion can be switched out and an equivalent resistance switched in to present a constant impedance to the amplifier output.

Some of the more elaborate drive-ins have a paging switch on each speaker. When this switch is turned on, it flashes a light in the concession stand which indicates that that particular car wants service. A girl in appropriate costume is dispatched to that car to take the patron's order for popcorn, cigarettes, *etc.*

In this system two sets of wiring are

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necessary: one radiates from the projection room to each car, and the other radiates from the concession stand to each car. A three-wire underground cable is used in this instance. One of the conductors is common "ground", and the other two carry the audio and paging circuits.

Projection Room Data

The projection room, as mentioned previously is usually in the same building as the concession stand along with rest rooms, storage rooms, *etc.* Because of space limitations, the projection room is small and low-ceilinged. The entire central building must have a low vertical outline in order to give a clear view to cars in outlying ramps. As a result, the lens ports are just above ground level and the floor of the projection room is considerably below ground level. This poses the problem of excluding surface drainage water from the room during a heavy rain. And instead of climbing stairs when he goes to work, the drive-in projectionist goes down several steps. The projection rooms are commonly made of either cement block or hollow tile. Fireproofing depends on local laws; in some cases fireproofing is non-existent.

The projectors used in drive-ins are of the conventional theatre type with rear shutters a *must* on account of the high-amperage lamps employed. There is one point of difference that may be of interest. The drive-in projector must be tilted up to the screen rather than downward as in the average theatre. Perhaps the British expression is that the projector has a reverse "rake".

If a standard projector base is used, it is necessary to place blocks under the front end of the base.

Much simpler is the use of a base made for such a purpose which allows easier tilting and steadier foundation for the projection. Most American projectors are intended to have excess oil drain to the front of the mechanism. In drive-in projectors the oil drainage is in the opposite direction and becomes something of a problem. Otherwise the projectionist's job, mechanical-wise, is about the same as in a movie theatre.

Arc Operation, Power Supply

Suprex lamps using copper-coated carbons operated at 60 to 80 amperes are favored for the smaller drive-ins. Larger places require higher intensity lamps at currents as high as 150 amperes. The exhaust vents from the lamps are rarely more than 5 feet long from the lamp housing to where the vent goes through the roof. Sometimes a strong wind will blow back down the vents and into the lamphouses with consequent flickering of the arc, and in some cases damage to the reflectors.

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Since drive-ins are in a semi-rural location, they draw their electrical power from transmission lines which are frequently plagued by unsteady voltage. This unsteadiness may be abrupt and irregular, or it may be a steady decline which begins about the time the show starts and reaches its lowest point about 10 p.m., and then starts climbing again. By closing time it may be 10 to 15% above normal. In some instances the line voltage has dropped from a normal of 117 volts to 85 volts.

One can imagine the effect on light and sound and appreciate why the projectionist must needs be nimble. Happily such extreme cases do not occur too often.

Smaller drive-ins tend to use dry-plate rectifiers as lamp current source; the larger jobs favor the motor-generator with its additional advantage of freedom from line voltage fluctuations.

Huge Screen Sizes

Screen sizes vary 40 feet to 53 feet in width, thus requiring projector lenses of fairly short focal length; 3 to 3.5 inches are the most common, depending on screen size and projection distance. If the distance is too great, much higher current is required for the arclamp. If the distance is too short, the lens becomes quite short in focal length and one approaches the point of diminishing returns along with severe projection angles and consequent distortion.

Coated lenses of high quality are needed to squeeze the last bit of light out of the projection system. The screen of course is solid. It needs no perforations, since the loudspeakers are in each car.

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ference, in actual manipulation, between the drive-in and the ordinary projection system lies in the amplifier power and layout. The large number of speakers absorb a good amount of audio power, more than the usual movie theatre. Small drive-ins can get by with 70 watts. A 900-car layout will require possibly 500 watts output from the main power amplifier.

Path of Sound Output

In general practice, the photo-cell output from the projector soundhead goes to a medium-size amplifier which feeds a number of large power amplifiers whose output transformers have multiple secondary connections. Each secondary tap feeds one ramp section with 20 to 40 speakers in that section. A switching arrangement allows the switching in or out of each group of speakers so that a short-circuit at any one speaker will not disable the total amplifier output, as mentioned previously. At least one spare power amplifier should be kept in readiness so that it can be switched into the ramp circuit in case of failure of another amplifier.

The common type of power amplifier is of three or four stages utilizing inverse feedback and push-pull output. The final stage is usually four 6L6 tubes in parallel push-pull or two 807's in push-pull. Best practice is to mount the amplifiers in standard racks spaced out from the wall to allow room for servicing. In some places they are hung from nails driven into the studding or else placed on rickety shelves. It all hinges on the owner's pocketbook.

Underground Cables Required

The cables carrying the audio signal to the speakers are laid about 18 inches underground. They must be under the surface far enough to be protected from the blades of earth-moving machinery and yet not so far buried as to increase cost of installation when the theatre is built, and also be available in case of replacement or repair.

The construction of the cable is probably similar to underground cable used in Britain, that is, with a central pair of triplet of flexible wires well insulated and covered overall with rubber or a stable plastic overcoating. Diameter ranges from ½ inch upwards, according to power carried and quality of outer covering. Dependability is the *sine qua non*.

It might be mentioned that lightning can sometimes be troublesome in the speaker cables. The lightning induces severe ground currents circulating in the cables which damage the speakers; or in some cases the pulses of ground current feed back to the secondaries of the amplifier output transformers. Since the surge is applied to the secondary (few turns) it appears across the primary (many turns) as a high-voltage pulse applied to the plate of the output valves, with resulting damage to the valves and related components. Luckily, this is rare, but it has happened. Shielded cable and adequate earthing (grounding) helps considerably in such cases.

Entry and Exit Problems

Like the usual theatre, space must be allowed for the "standees" who come in while the show is in progress or while the theatre is filled. In American parlance they wait in the lobby or in the "crush hall" in England (I think). In the drive-in a space is allowed for the cars to congregate while waiting for an empty ramp space, with due allowance for ease in reaching the concession stand. Also, some space must be allowed for cars exiting after the occupants have seen the show. With traffic as it is on American highways, the cars leaving the theatre cannot always depart immediately. Therefore a space for these cars should be included in the layout.

With the coming of winter the drive-in is faced with the problem of shutting down for the long cold winter months when the temperatures often fall as low as 30 degrees below zero. The intermittent movements should be drained and all excess oil wiped out of the machines and soundheads, and generous amounts of cellulose fiber packed in the machines to absorb any oil seepage. The projectors, motor-generators, amplifiers, *etc.* should be covered with canvas to keep out dust and moisture condensation.

The lenses should be removed to a

huff

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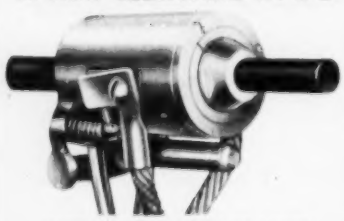

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location where temperature variations are not so great and where humidity is more nearly constant. Some owners make a practice of suspending a 100 watt bulb in each amplifier section; said bulb burns all winter long to keep temperature and humidity constant. Such a procedure seems costly, but it will pay for itself during the summer months in preventing costly breakdowns. The long-suffering screen tower stands there all winter and gets a new coat of paint in the spring. Needless to say, all water pipes and plumbing are drained and filled with oil to prevent sewer gas from leaking into the buildings.

The Screen Tower, Surface

"Screen tower" is the term applied to the structure whereon the projected image comes to rest and it can be as elaborate or simple as the purse allows. Some screen towers are prefabricated, that is, they are factory-made in various sizes and shipped to the site of the drive-ins dismounted or disassembled into their component parts. Upon arrival they are assembled by a trained crew or by carpenters.

Such screens are usually made up of an iron framework; supports or footings are imbedded in sturdy concrete bases heavy enough to withstand the stress of gales. The main iron pieces are 3- 4-inch angle iron and the cross members of lighter material. To these cross members are bolted the flat sections comprising the screen sub-base. Over these is nailed the 4x8-foot sections of waterproof plywood of the screen surface. The plywood is spray-painted with the usual subcoats of paint and given a final coat of pure white matte paint. The black masking is painted around the border to suit the size picture intended.

A more common practice, however, is to combine the screen tower with the administrative offices, ticket office and advertising marquee. In this type construction the screen tower is a rectangular box about 40 feet wide, 15 feet deep, and 60 feet high, the dimensions depending upon screen size, office space, *etc.* Such a structure must be firmly anchored and braced to cope with wind pressures which can be quite high.

It might be appropriate here to tell the tale of a drive-in which succumbed to a bad wind several years ago. During the gale the screen tower, offices, and all blew away and scattered across the landscape. The film being shown was "Gone With The Wind"! Because of the effects of weathering, it is necessary to repaint the white screen surface each year and sometimes oftener, including the black masking border.

Drive-In Importance Growing

As might be expected, there is an element of competition between the drive-in and the downtown theatre. Since the drive-in is in operation for a few months of the year, there would appear to be a tendency for the film companies to favor the downtown theatre that operates all year around, which, in the writer's opinion, is only right. However, in the last few years the drive-ins have had such profitable business that they are in a position to compete with the city theatres in the bidding for later release pictures.

But the general feeling seems to be that drive-in patrons are not too much concerned with the lateness of pictures. They seem to be content with second- and third-run pictures as a rule. It must be admitted that the drive-ins have snared a good share of the summer business from the city theatres that boast later pictures and air-conditioning. Many of the owners of the city theatres have built drive-ins to meet the competition. This is understandable when you consider that the drive-in, during its season of operation, will pay a larger return on the money invested than will the city theatre.

For a while there was a belief in the movie industry that the drive-in was a flash in the pan, a temporary infatuation that eventually would die a slow death. Time has shown these prophets to be wrong because the drive-in is steadily increasing in numbers as well as volume of business.

The Projectionist's Status

Now a final word about the lowly man in the "box" or projection room. He usually reports for work at 7 p.m., runs two complete programs of two hours each plus an intermission between programs, and then heads for home about midnight. On Saturdays there is generally a late show starting at midnight and lasting until 2 a.m.

The projectionist most often wears overalls as the accepted costume. When a man works in the fields he dresses as a farmer, and when he runs projectors out in the cornfields he dresses the same as his country cousin. All in all it is about the same as projecting in the city theatre excepting that there is a rustic atmosphere present and this seems to be the greatest attraction of the drive-in theatre.

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VISIBILITY FACTORS

(*Continued from page 8*)

wide-angled lens for magnifying spectacular scenes in conventional projection, is old-hat in the super-deluxe movie theatres of large American cities. But in 1929 Paramount experimented with 56-mm and 65-mm films, and revamped several German Ernemann projectors for showing the wide films experimentally.

In the same year, Fox tinkered with 70-mm film and produced a picture on this width titled "Happy Days." Exhibited by means of remodelled Super Simplex machines, "Happy Days" mildly amused the patrons of the Carthay Circle Theatre in Los Angeles and the Gaiety Theatre in New York in 1930.

Meantime, George Spoor, Henri Chrétien, and other experimenters were working with cylindrical optics to squeeze wide-angle scenes into regular 35-mm frames and to expand them again at the projection end for wide-screen reproduction. The "modern" CinemaScope is said to be Chrétien's brainchild.

"Happy Days," although favorably reported, did not enjoy anything like Cinerama's present success. It had neither color nor stereosound, and spectacular sequences were absent. Neither was the Grandeur screen curved to "surround" the audience with grandiose, even if distorted, scenery. Had Grandeur's first attempt consisted of a *potpourri* of novelty shots instead of dramatic continuity of an infantile order, it might have anticipated, at least to a slight degree, Cinerama's astonishing ability to hypnotize audiences with spectacular tidbits.

Cinerama vs. *True 3-D*

It has been stated repeatedly by the uninformed that Cinerama is a 3-D process. Apparently these disseminators of public information never had a grandma who possessed a parlour stereoscope with views of the National Parks and intimate 3-D glimpses of the domestic scene on its risqué side Stereoscopes were quite the rage even as early as 1895.

Cinerama is not 3-D!

In a true 3-D process, the picture on the screen is a composite of right-eye and left-eye images. One image is plane-polarized at right angles to the plane of polarization of the other. Polaroid spectacles worn by the patrons unscramble the composite image and enable each eye to receive the image intended for it, rejecting the other. The picture has real *depth*—the different distances of objects can actually be seen, and the observer feels that he is *in* the picture.

Now, does all this have a familiar ring? It should.

When silent movies were still in their romantic glory, theatre patrons were now and again simply bowled over with *genuine* 3-D movies which had to be looked at through special glasses. For it was in 1925 that the first 3-D novelty reel was filmed by the anaglyph method, wherein colored filters were used to bring to each eye its proper and separate image, blocking off the other. Projection was orthodox—the print itself contained the magic ingredients of stereoscopic realism in its superimposed red and blue-green images. The eye wearing the red filter could see the blue-green picture as a black image, but not the red one—and *vice versa*.

Norling's "Audioscopiks"

In 1935 the anaglyphic 3-D short subjects were resumed with sound under the name "Audioscopiks" (J. A. Norling). Popular as they were, no producer seriously supposed for a moment that audiences would tolerate the eyestrain resulting from viewing a full-length feature film through red and blue-green spectacles.

Polaroid, a marvelous substance indeed, has removed the "visual insult" of the anaglyph, but it has produced headaches aplenty on the projection end. As the process is now constituted, two films must be run at the same time, and the screen images matched.

In 1936 Paramount devised a 3-D process similar to Natural Vision and called it Paravision. Special stereo cameras were constructed, used for filming test sequences, and then laid away to collect dust. Now, 17 years later, the same Paravision cameras have been dusted off and put to work to grind out "new" 3-D films.

Asked why Paravision was not used when first devised, Adolph Zukor, Paramount board chairman, replied that business was good in those days, and Tv has forced the industry to delve into its bag of tricks to meet competition. "The movies cannot afford to stand still. Standing still in show business means retrogression." Mr. Zukor was merely echoing IP.

"Bwana Devil" has not been entirely satisfactory, despite its tremendous house-packing power as a novelty. The picture itself is said to be strictly Grade B-minus. The prints were reported bad, although this writer suspects small errors in superposition to be responsible for the fuzzy focus reported. (This is not the fault of projectionists, for it is impossible to obtain perfect superposition when two projectors 5 or 6 feet apart are used.) Also, realistic stereosound was wanting.

But all these are troubles and deficiencies which are amenable to correction as time goes on. The most important thing about Natural Vision and its sister processes is that they are successfully stereoscopic.

Picture Visibility—Naturalness

Picture-visibility (that is, the "naturalness" of a motion picture combined with the visual comfort with which it can be viewed for protracted periods of time) is of paramount importance in the choice of a picture-reproducing process. How much imperfection will the paying public tolerate in motion pictures, conventional, panoramic, and stereoscopic?

Picture-visibility is one thing in panoramic presentations and something else again in 3-D and conventional movies. All the many factors comprising this elusive but all-important "something" ought to be closely scrutinized by every projectionist concerned with the future of his craft. An attempt to present some of these factors will be made in these columns, beginning with next month's installment of this series.

[TO BE CONTINUED]

Neumade Film Synchronizer

Neumade Products Corp. demonstrated its Synchromaster film splicer at the SMPTE Convention in Los Angeles to show the value of the machine in synchronizing the dual film used in 3-D production.

Useful for all types of film synchronization in projection rooms, studios and laboratories, the Synchromaster machines are available from stock in models with 2, 3 and 4 hubs for 16- and 35-mm film. Other assemblies containing 5, 6 or more hubs can be assembled to order.

Canadian National Film Fair

A Canadian National Film Fair is being planned as a cooperative project by a number of industry groups who will hold their annual meetings in Toronto next October. The Motion Pictures Theatres Association of Ontario has been named to work out plans.

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Harold E. Wilson, USMCR
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As the attack grew fiercer, a mortar shell blew him off his feet. Still, dazed and weakened, he held on, leading the fight all night till the last Red assault was beaten off. At dawn, by sheer courage, the Sergeant had saved not only his position, but the precious lives of his men.

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